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ABSTRACT

This curriculum guide is intended to meet the needs of librarians in all schools in Pennsylvania, including those lacking access to online technologies. It is recommended that the online curriculum be integrated with the teaching of library media skills in other discipline areas at appropriate elementary and secondary grade levels, and that librarians, administrators, and subject area teachers jointly establish goals and objectives for the implementation of the online curriculum. The publication's aim is to teach school media specialists to assist students in developing skills that will enable the students to search and retrieve information from bibliographic databases, not only to access information necessary for their studies, but to also acquire skills for lifelong learning. The first section of the guide, "Online Curriculum," features an introduction, course objectives, student outcomes, planned course scope and sequence, and sample lesson plans. The second section, "Online Management," discusses vendors, budget and costs, gateway products, telecommunications, copyright, security, record management, and resource sharing networks. Interlibrary loan, public relations, and alternatives to online searching are also described. Appendices contain quality goals for education; principles of information management; an individual search record sheet; an online usage report; a search evaluation report; a glossary; procedures for using LIN-TEL document retrieval; and a 41-item annotated bibliography. (SD)

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PENNSYLVANIA ONLINE:

A Curriculum Guide for School Library Media Centers

ACCESS PENNSYLVANIA

An Agenda for Knowledge and Information Through Libraries

State Library of Pennsylvania

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PENNSYLVANIA ONLINE:

A Curriculum Guide for School Library Media Centers

An Agenda for Knowledge and Information Through Libraries

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INTRODUCTION

"The librarian, at the information crossroads, is data pathfinder for some and knowledge provider to others. The quality of service offered by the library is a function of the librarian's ability to effectively participate in interpersonal communication, understanding of the disciplines for which he or she has responsibility, and skill using the automated and manual tools of choice. What is certain is the computer's role as indispensable change agent in the process of storing and retrieving knowledge."[1]

Instruction in online database searching offers students an additional tool for the process of information retrieval, providing library users with a diverse range of current and relevant resources.

ACCESS PENNSYLVANIA: An Agenda for Knowledge and Information Through Libraries, is a program that makes Pennsylvania's vast library and information resources available to all its residents. The State Library of Pennsylvania has prepared these guidelines to fully integrate online searching skills as part of the research process in school library media programs. The implementation of an integrated process encourages the development of creative thinking skills that will assist students in their lifelong role as contributing members of a democratic society.

Pennsylvania Online is intended to guide librarians in the instructional process as well as in the management of online services. It is designed to help students remain active learners throughout the course of their lives.

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1 Roger C. Palmer, Online Reference and Information Retrieval (Littleton, CO: Libraries Unlimited, 1987) p. 1.

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SECTION I - Online Curriculum

INTRODUCTION

Online bibliographic searching, as addressed in this curriculum guide, refers to the process of locating citations to materials by means of a computer. This enables students and staff to gain access to a broader, more current range of materials than is available in non-computerized form.

This online curriculum guide is intended to meet the needs of librarians in all schools, including those lacking access to online technology. It is recommended that the online curriculum be integrated with the teaching of library media skills in other discipline areas at appropriate elementary or secondary grade levels. Librarians, administrators, and various subject area teachers should jointly establish the goals and objectives for the implementation of the online curriculum. Adaptations and changes to the scope and sequence of skills can be made based on local school goals and objectives.

COURSE OBJECTIVES AND STUDENT OUTCOMES

The Planned Course for Online Curriculum is divided into four sections:

SECTION I :	Develop an Awareness of Online Searching, the Telecommunication Process, and Searching Techniques
SECTION II:	Develop a Search Strategy
SECTION III:	Organize and Conduct a Search
SECTION IV:	Analyze and Evaluate Citation Relevance, Cost Effectiveness, and Retrieval Techniques

The scope and sequence of skills includes 43 student outcomes, which can be expanded or contracted depending upon the target audience. The total number of hours devoted to each section will vary according to the needs, resources, and instructional goals of the local school district.

The scope and sequence chart provides information which will be helpful in planning instruction. This includes the following:

- The Quality Goals of Education and Critical Thinking Skills to which each section is linked are identified by number. Please refer to Appendix A for the complete list of the Quality Goals of Education and to Appendix B for the complete list of Critical Thinking Skills.
- Sample lesson plans have been developed for all course objectives. All sample lesson plans are located directly behind the scope and sequence chart.
- The content of the lesson is summarized and appropriate resources and materials are identified. These are not all inclusive and can easily be expanded upon.
- The expected levels of achievement are the student outcomes. These are the items that should be evaluated to determine if achievement has been demonstrated by the student.

- The procedures for evaluation provide recommendations for testing. The grading process, however, is a local decision and should be handled accordingly.

This curriculum can be used to meet some of the requirements in the Pennsylvania Code, Title 22, "Education," Chapter 5, Section 5.7. While it is recommended that the curriculum be integrated with other discipline areas, the librarian must play a vital role in its delivery. Please refer to Integrating Information - Managment Skills: A Process for Incorporating Library Media Skills Into Content Areas, PDE, 1988.

SECTION I: Develop An Awareness of Online Searching, The Telecommunication Process, and Searching Techniques

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
I. Develop an awareness of online searching, the telecommunication process, and searching techniques.	A. Impact of information on our society 1. Explain the importance of information as a commodity or a resource and the ethics of equal access. 2. Describe the collection and dissemination of information. 3. Recognize the role of information in decision-making.	Megatrends by John Naisbitt Going Online (Learned Information, Inc.) In-house video production Collection of relevant periodical and newspaper articles, books, etc. Examples of databases such as: Statistical Abstract or telephone book	A. 1. Student will participate in a class discussion on the impact of information in our society, including the ethics of equal access to information. 2. Student will gather information about the use of technology to locate information. 3. Student will cite an example of how information can be used to affect a decision.	Librarian/Teacher evaluation of class discussion Librarian/Teacher evaluation of materials gathered
	B. Online seaching as an information tool 1. Define online searching. 2. Observe and participate in a demonstration of an online search. 3. Examine a printout of an online request. 4. Develop an awareness of commercial or CD-ROM database as an information retrieval tool.	BRS/Search Service Video Training Course Part 1 Going Online (Learned Information, Inc.) Appropriate hardware/software CD-ROM database(s)	B. 1. Student will define terminology associated with online database searching. 2. Student will observe an online searching demonstration. 3. Student will examine an online printout. 4. Student will cite an example of how a commercial or CD-ROM product could fill a specific need for information.	Librarian evaluation of class discussion/ demonstration

SECTION I: (Continued)

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
	C. Telecommunications 1. Identify components necessary for telecommunications. a. Telephone b. Modem c. Microcomputer software or terminal software 2. Explain networks and networking. a. Tymnet b. Telenet c. Direct Access d. Telefacsimile machine e. Satellite dish f. Electronic mail	Telecommunication chart BRS Manual BRS tapes and worksheets Locally produced transparencies	C.1-2. Student will discuss the various components of telecommunications.	Librarian evaluation of class participation
	D. Process of a sample search 1. Identify and explain the process of a sample search. a. Search techniques b. Citations	Sample searches for discussion, i.e., print, CD-ROM, online. Sample search for quiz	D. 1. Student will explain the process involved in conducting manual and online searches and recognize the difference in search results.	Librarian evaluation of class discussion
	E. Topic selection and refinement 1. Develop a research question. 2. Identify major terms/ concepts of topic (key words). 3. Select a current topic conducive to online searching.	General and specialized encyclopedias, reference books, almanacs, atlases, handbooks, vertical file, Readers' Guide Locally produced teaching aids/ worksheets	E.1-5. Student will identify the focus of a research question and compose a concise statement which reflects the intent of the information needed.	Approval of topic: a. Scope of topic 1. Length of assignment 2. Type and variety of material available and required 3. Academic ability of student

SECTION I: (Continued)

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
	4. Identify available resources for background information. 5. Refine narrowing/ broadening of topic.	ACCESS PENNSYLVANIA Database Problem Definition Process		b. Appropriate background resources c. Relevant related terms
	F. Bibliography 1. Produce a working bibliography.	Specialized references as indicated by topic Locally produced teaching aids	F. 1. Student will produce a working bibliography of print and non-print resources.	Evaluation of bibliography for: a. Relevant sources b. Complete bibliographic citation in approved format c. Appropriate number of resources d. Variety/type of resources
	G. Manual search 1. Conduct a manual search on an approved topic using: a. Encyclopedias b. Periodical index(es) c. Card catalog d. Vertical file e. Other	Library collection	G. 1. Student will complete a manual search.	Librarian/Teacher evaluation of manual

Quality Goals of Education: 1, 2, 3, 4, 6, and 11 (Appendix A)

Critical Thinking Skills: 1, 3, 4, 7, 8, 9 10, 11, 12, and 13 (Appendix B)

*Note: Complete bibilographic information for this series may be found in Appendix H.

SECTION II: Develop A Search Strategy

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
II. Develop a search strategy.	A. Major concepts 1. Explain how to choose major concepts and their relationships from the research question.	Problem Definition Process (worksheets 1.1 and 2.1) Examples of research questions based on curriculum related subject	A. 1. Student will identify major concepts in research questions.	Librarian/Teacher evaluation of student's ability to derive major concepts from sample research questions
	B. Databases 1. Identify and explain content, structure, and components of available database guides and/or aids emphasizing the importance of database selection. a. Type - full-text or bibliographic b. Scope and dates of coverage c. Record structure 2. Identify and explain subject categories 3. Cost	Handouts of lists, examples and sample entries of database guides and aids from BRS, DIALOG, etc. Database price list information for cost comparison	B. 1. Student will use available guides and aides to general and specific databases. 2. Student will select database(s) most appropriate for a search.	Librarian/Teacher prepared exercises and/or quiz
	C. Key words 1. Identify key words, relevant synonyms, related terms, and variant spellings. 2. Explain: a. Key words from major concepts b. Common synonyms and use of thesauri	Worksheets 3.1, 3.2, 3.3, 3.4, and 3.5 from Problem Definitions Process. Printed thesauri, e.g., Sears, LC heading, Thesauris of ERIC Descriptors, Descriptors, (ORYX Press, 1987)	C.1-2. Student will select key words, synonyms, truncations, variant spellings, and proper names for use in online searching.	Evaluation of completed worksheets and/or quiz

SECTION II: (Continued)

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
	c. Truncation d. Variant spellings e. Proper names f. Plurals			
	3. Choose related key words.	Worksheet 6.1, pg. 43 Problem Definition Process	C.3. Student will choose key words which are related.	Evaluation of completed worksheet
	D. Logical operators 1. Illustrate key word relationships by using Venn Diagrams to explain logical operators. a. Boolean logic using Venn diagrams b. Positional operators c. Combining positional operators	Librarian prepared transparencies Handouts Commercially prepared handouts or manuals, such as: DIALOG or BRS. Worksheets 6.2, 6.3 and Handout 6.2 Problem Definition Process, pp. 46-47. CD-ROM Databases ACCESS PENNSYLVANIA Database	D. 1. Student will combine search terms with appropriate logical operators to define and limit a topic.	Librarian/Teacher evaluation of worksheets Quiz or test
	E. Appropriate search strategy 1. Illustrate the differences between free text and controlled vocabulary searching by comparing same search performed both ways.	Handouts Printouts	E. 1. Student will distinguish between free-text and controlled vocabulary searching.	Librarian evaluation of class discussion
	F. Basic system protocol (features) 1. Use basic system protocol required for online searching. a. Choose an appropriate database	Locally prepared transparencies Handouts List of "stop words" Lessons from Problem Definition Process	F. 1. Student will prepare a basic search strategy using system protocol.	Librarian review of student written search for proper sequence of steps

SECTION II: (Continued)

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
	b. Develop basic search statement(s) using identified keywords c. Determine validity of search			
	C. Advanced system protocol 1. Demonstrate proper advanced system protocol. a. Limiting functions b. Search specific paragraphs/fields c. Changing databases d. Saving search strategies e. Expand/root f. Display g. Wild card h. BRS/Link i. Cross-postings database	BRS Manuals DIALOG Manuals Locally produced transparencies Handouts BRS Search Strategy Form	G. 1. Student will prepare a search using advanced searching techniques.	Librarian review of student designed strategies

Quality Goals of Education: 1, 2, 3, 6, 10, and 11 (See Appendix A)

Critical Thinking Skills: 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, and 13 (See Appendix B)

SECTION III: Organize and Conduct A Search

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
III. Organize and conduct a search	A. Special function keys 1. Locate, identify, and use specific function keys to break printing and correct errors. a. Break b. Backspace c. Line deletion	Keyboard chart Information systems and microcomputer/ terminal manuals	A. 1. Student will demonstrate competency in the use of special function keys.	Librarian prepared exercise
	B. Logging on and off 1. Discuss communications software package. 2. Explain log-on procedure a. Network log-on b. Vendor log-on 3. Discuss security and system passwords.	Communications software package Vendor manuals	B. 1. Student will discuss communications package and log-on/log-off procedures. 2. Student will demonstrate an awareness of the importance of system security.	Librarian evaluation of log-on/log-off Librarian evaluation of class discussion and observation
	C. Search strategy 1. Demonstrate skills in writing an effective search strategy. a. Well-defined research question b. Appropriate search terms and logic c. Correct syntax d. Narrow/broaden topics 2. Select relevant database(s).	Information systems manuals Database guides and indexes Thesauri and descriptor listings Search Evaluation Report (Appendix E)	C.1-2. Student will write an effective strategy with alternatives for narrowing and broadening the online search.	Librarian evaluation of student strategy

SECTION III: (Continued)

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
	D. Online search 1. Reevaluate written search strategy.	Microcomputer/terminal Information systems manuals Database guides	D. 1. Student will execute an online search using the strategy he/she developed and print a sampling of citations.	Librarian evaluation of search
	Note: III.B can be taught with I.C.			
	E. Search modification and refinement 1. Identify common errors in search strategies. a. Incorrect use of operators b. Incorrect use of descriptors c. Syntax errors 2. Demonstrate process of responding interactively to online results. a. Narrow/broaden topic b. Print sampling of citations to determine relevancy. c. Choose additional search terms when necessary. d. Print appropriate field of relevant citations. e. Use nesting commands.	Sample problem searches Locally produced teaching aids Microcomputer/terminal Information systems Manuals Database guides Worksheet Common Errors Worksheet (Page 29)	E. 1. Student will identify and correct improper search strategies. 2. Student will use alternate search strategies as needed when online.	Librarian evaluation of worksheet and/or searches Librarian evaluation of student search strategies

Quality Goals of Education: 1, 2, 6, 10, and 11 (See Appendix A)

Critical Thinking Skills: 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, and 13 (See Appendix B)

SECTION IV: Analyze and Evaluate Citation Relevance, Cost Effectiveness, and Retrieval Techniques

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
IV. Analyze and evaluate citation relevance, cost effectiveness, and retrieval techniques.	A. Record Management 1. Discuss terminal log and student record sheet 2. Explain: a. log-on message b. log-off message c. connect time d. cost factors	Transparency of sample terminal log Transparency of student record sheet Librarian prepared worksheet	A. 1. Student will complete a log sheet and a student serach record sheet. 2. Student will identify parts of a log and explain terminology in log-on, log-off messages.	Evaluation of completed log and record sheets Evaluation of computer worksheets
	B. Printout 1. Describe fields in citations. a. Accession number b. Author c. Title d. Source, date e. Abstract f. Descriptors Identifiers g. Language h. Price i. Other 2. Evaluate printout for relevant citations. a. Define relevant b. Discuss reading level (target audience)	Sample printout Transparencies Librarian prepared worksheet	B. 1. Student will identify fields on a sample search. 2. Student will identify relevant citations from his/her own search.	Evaluation of completed worksheet Evaluation of student searches

SECTION IV: (Continued)

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
	C. Determine cost effectiveness of online searching. 1. Discuss the relationship between the cost of an online search and limited financial resources. 2. Compute cost per citation (total cost divided by the number of relevant citations).	Sample search Transparency Worksheet for Computer Costs	C. 1. Student will participate in a discussion regarding the relationship between the need for an online search and limited financial resources. 2. Student will compute the cost effectiveness of his/her own search.	Evaluation of final cost figures
	D. Relevant document retrieval 1. Discuss the availability of local library resources. 2. Explain resource sharing. a. LIN-TEL b. ACCESS PENNSYLVANIA Database c. Community d. ILL e. Document retrieval vendors f. Other 3. Discuss costs of resource sharing or interlibrary loan. a. Copying b. Electronic mail c. U.S. Mail d. Telefacsimile e. Statewide delivery of materials (IDS) f. Individual use of ACCESS PENNSYLVANIA Database g. Statewide Library Card	List of resources Pennsylvania and local interlibrary loan guidelines List of resource costs where applicable Summary of copyright law	D. 1. Student will identify local and outside sources for document retrieval. 2. Student will list relevant items which can be obtained from outside sources. 3. Student will obtain at least one item from an outside source and estimate the cost of retrieval.	Librarian evaluation of class discussion Librarian/Teacher evaluation of student's list Librarian check of document retrieval

SECTION IV (Continued)

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
	4. Discuss time factor. a. Planning b. Responsibilities of borrower		4. Student will demonstrate the importance of planning and being responsible for interlibrary loan.	Librarian evaluation of student research planning and responsibility as evidenced by inter-library loan statistics
	5. Discuss copyright law including. a. Photocopying b. Software c. Videocassettes/tapes d. Fair use laws e. Citing references versus plagiarism		5. Student will identify the parameters as stated in the copyright laws for using and copying the work of others.	Librarian evaluation of class discussion and/or quiz
	E. Search strategy improvement 1. Discuss original search statement including possible modifications. a. Other databases b. Other key words c. Synonyms d. Other techniques e. Revised logic	Sample search transparencies	E. 1. Student will prioritize possible revisions of a sample search and identify ways of altering the strategy to improve the number of relevant citations.	Librarian observation of student participation in class discussion. Review student's prioritized listing.
	F. Comparison of manual and online searches 1. Discuss the advantages and disadvantages of online searching.	Sample online search Students' manual searches	F. 1. Student will list the advantages and disadvantages of online database searching.	Librarian evaluation of list

SECTION IV: (Continued)

OBJECTIVE	SKILLS	RESOURCES	EXPECTED LEVEL OF ACHIEVEMENT	EVALUATION
	2. Discuss comparisons. a. Time b. Recovery/availability c. Cost d. Currency e. Complexity of searches f. Full-text availability		2. Student will compare citations from a manual search to those retrieved from an online search.	Librarian evaluation of class discussion
	G. Utilization of retrieved items 1. Determine the actual use and/or utility of the retrieved items to the topic in the final paper or bibliography.	Students' retrieved items	G. 1. Student will list each item retrieved and determine its actual use in the final paper and bibliography.	Librarian/Teacher evaluation of student list

Quality Goals of Education: 1, 2, 3, 4, 6, and 11 (See Appendix A)

Critical Thinking Skills: 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, and 13 (See Appendix B)

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LESSON PLAN

LESSON OBJECTIVE: Describe the collection and dissemination of information (Section I, A.1-3).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will participate in a class discussion on the impact of information in our society, including the ethics of equal access to information.

2. Student will gather information about the use of technology to locate information.

3. Student will cite an example of how information can be used to affect a decision.

ACTIVITIES

Librarian

1. Introduce and discuss the following concepts:

   a. technology - e.g., compact disc, online databases.
   b. communications - e.g., telefacsmilie machine, electronic mail.
   c. applications - e.g., LIN-TEL, MEDLARS.

2. Discuss concepts from Megatrends or another book dealing with the power of information.

Student

1. Collect news articles or summaries of television news in which information technology has had an impact and cite an example of how information could have affected a decision.

2. Make a bulletin board of relevant articles regarding the impact of information in our society (optional).

RESOURCES NEEDED:

REFERENCES: Collection of relevant periodical and newspaper articles

EVALUATION PROCESS: Librarian evaluation of class discussion/gathered materials.

LESSON PLAN

LESSON OBJECTIVE: Develop an awareness of online database searching as an information tool (Section I, B.1-4).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will define terminology associated with online database searching.

2. Student will observe an online database searching demonstration.

3. Student will examine an online printout.

4. Student will cite an example of how a commercial or CD-ROM product could fill a specific need for information.

ACTIVITIES

Librarian

1. Discuss the following:

   a. Online Searching - what it is, terminology, what to expect from a search.

   b. Advantages - currency, speed, comprehensiveness, (scope and variety), Boolean searching, truncation.

   c. Limitations - costs, downtime, document retrieval, limited choice of databases in some disciplines, knowledge of protocols/ vocabulary to perform search.

2. Demonstrate an online database bibliographic search.

3. Demonstrate or discuss CD-ROM products such as ACCESS PENNSYLVANIA, The New Grolier Electronic Encyclopedia (Grolier, 1988), ERIC (Silver Platter) and Magazine Articles Summaries on CD.

Student

1. Define online terminology.

2. Observe an online demonstration and participate in a discussion about general and specialized databases (e.g., search air pollution in Magazine Index and Cambridge Scientific Abtracts: Life Sciences).

3. Examine an online printout.

4. Cite an example of how a commercial or CD-ROM database could fill a specific need for information.

RESOURCES NEEDED:

REFERENCES: Documentation from vendor, e.g., DIALOG Bluesheets

AUDIO VISUAL: Overhead transparency of a sample search printout

EQUIPMENT: Computer/terminal, modem, communication software, printer (optional), large screen monitor (optional) or LCD projection panel and overhead projector screen

HANDOUTS: Glossary of terms, copies of sample search printout

EVALUATION PROCESS: Librarian evaluation of class discussion/demonstration.

ALTERNATIVES:

1. Use off-line sample disc or compact disc database to demonstrate search.

2. Comprehensive lecture: use transparencies of printout to show results of search.

LESSON PLAN

LESSON OBJECTIVE: Identify and explain the components and the process of using telecommunications (Section I.C.1-2).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will discuss the various components of telecommunications.

ACTIVITIES

Librarian

1. Create a handout on telecommunications.

2. Discuss and demonstrate the following:

   a. hardware, e.g., modem, cables, microcomputer.
   b. software, e.g., Crosstalk, Apple Access.
   c. telecommunications services, e.g., Tymnet, Telenet.
   d. information services, e.g., DIALOG, BRS.
   e. network technology, e.g, satellite dish, telefacsimile.
   f. electronic mail - use in ILL to send and receive requests.

Student

1. Identify hardware components.

2. Demonstrate an awareness of the various telecommunications processes.

RESOURCES NEEDED:

AUDIO VISUAL: BRS/SEARCH Service Video Training Course. Part I Going Online (Learned Information)

EQUIPMENT: VCR, monitor, computer, modem, printer, telephone line

HANDOUT: Telecommunications process

EVALUATION PROCESS: Librarian evaluation of class participation.

LESSON PLAN

LESSON OBJECTIVE: Identify and explain the process of online searching. (Section I, D.1).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will explain the process involved in conducting manual and online searches and recognize the difference in search results.

ACTIVITIES

Librarian

1. Prepare several sample online searches.

2. Discuss the process used in each search.

3. Demonstrate the search process involved in the following:
   - Card Catalog
   - Readers' Guide to Periodical Literature
   - Online Search
   - CD-ROM Product

Student

1. Predict the expected number of relevant citations which will be found in each type of search.

2. Participate in a class discussion about the process involved in each type of search.

3. Observe an online search in process.

RESOURCES NEEDED:

HANDOUTS: Sample searches in varying formats, i.e., card catalog, CD-ROM, online search

EQUIPMENT: Computer, modem, printer, telephone line, and communications software

EVALUATION PROCESS: Librarian evaluation of class participation.

LESSON PLAN

LESSON OBJECTIVE: Develop the research question (Section I, E.1-5).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will identify the focus of a research question and compose a concise statement which reflects the intent of the information needed.

ACTIVITIES

Librarian

1. Introduce the concept of topic formulation (limiting/narrowing).

2. Demonstrate the organizational characteristics of various reference tools in support of developing the research question, e.g., Readers' Guide headings and subheadings. (See Instruction Sheet 1.2 in Problem Definition Process.)

Student

1. Using Worksheet 1.1, differentiate between focused and unfocused research questions.

2. From the list of classroom teacher topic assignments, or Handout 1.3, develop research questions and evaluate them in small group discussions.

3. Select a current topic conducive to online searching.

4. Identify available resources for background materials.

5. Develop a research question which has been properly refined.

RESOURCES NEEDED:

REFERENCES: Instruction Sheet 1.2 from Problem Definition Process

HANDOUTS:
1. Worksheets 1.1 from Problem Definition Process
2. Classroom teacher topic assignments or Handout 1.3 from Problem Definition Process

EVALUATION PROCESS:
1. Small group evaluation of student problems/questions
2. Librarian/teacher observation of small group discussions.

LESSON PLAN

LESSON OBJECTIVE: Produce a working bibliography (Section I, F.1).

EXPECTED LEVEL OF ACHIEVEMENT:

Student will produce a working bibliography of print and nonprint resources.

NOTE: This skill is best taught as an integrated activity.

ACTIVITIES

Librarian

1. Conduct a general review of specialized references as applicable to assignment.
2. Lecture/demonstrate the writing of bibliographic citations.

Student

1. From a list of topics, identify appropriate sources.
2. Locate appropriate sources on topic.
3. Select appropriate sources on topic.
4. Compile a bibliography of at least six citations drawn from at least three different sources.

RESOURCES NEEDED:

REFERENCES: Specialized references as indicated by topic

HANDOUTS:
1. Sample bibliographic citations
2. List of content for bibliographic citations
3. List of appropriate topics

EVALUATION PROCESS: Librarian/teacher will evaluate bibliography for:

- Sources relevant to topic
- Complete bibliographic citation
- Appropriate number of resources for topic
- Variety of resources

LESSON PLAN

LESSON OBJECTIVE: Conduct a manual search (Section I, G.1).

EXPECTED LEVEL OF ACHIEVEMENT:

Student will complete a manual search.

ACTIVITIES

Librarian

1.. Review the manual search process.

Student

1. Search a minimum of two databases (e.g., card catalog, Readers' Guide) for relevant key words on the same topic.

2. During a class discussion, compare and contrast the results of the manual searches.

RESOURCES NEEDED:

REFERENCES: Readers' Guide, encyclopedia, periodical and newspaper indexes, card catalog, or vertical file.

EVALUATION PROCESS:

1. Librarian/teacher evaluation of manual search.

2. Observation of class discussion.

LESSON PLAN

LESSON OBJECTIVE: Choose major concepts from the research questions (Section II, A.1).

EXPECTED LEVEL OF ACHIEVEMENT:

Student will identify major concepts in research questions.

ACTIVITIES

Librarian

1. Review lesson objective.
2. Discuss the relationship between key words within sentences.
3. Discuss general vs. specific and broad categories.
4. Distribute worksheet 2.1 from Problem Definition Process.

Student

1. Using worksheet 1.1 complete worksheet 2.1.
2. Complete worksheets 4.1 and 4.2.

RESOURCES NEEDED:

HANDOUTS: Worksheets 1.1, 2.1, 4.1, and 4.2 from Problem Definition Process

EVALUATION PROCESS: Librarian/teacher evaluation of completion of worksheet 2.1.

LESSON PLAN

LESSON OBJECTIVE: Analyze the content and structure of available database guides and aids (Section II, B.1-2).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will use available guides and aids to general and specific databases.

2. Student will select database(s) most appropriate for a search.

ACTIVITIES

Librarian

1. Prepare copies of worksheets 7-1b and 7.3 from Problem Definition Process.

2. Review lesson objective.

3. Hand out sample database guides.

4. Discuss components of guides.

5. Discuss subject categories.

Student

1. Complete worksheet 7.1b, matching topics with categories.

2. Select an appropriate topic from Worksheet 7.1b for an online search.

3. Complete Worksheet 7.3.

RESOURCES NEEDED:

HANDOUTS:

1. Handouts of sample database guides

2. Worksheet 7.1b, 7.3, and Handout 7.1 from Problem Definition Process

3. Quiz (optional)

EVALUATION PROCESS: Librarian/teacher evaluation of worksheets 7.1b and 7.3 and/or quiz.

LESSON PLAN

LESSON OBJECTIVE: Identify key words, relevant synonyms, related terms and variant spellings (Section II, C.1 and C.2).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will select key words, synonyms, truncations, variant spellings, and proper names for use in online searching.

ACTIVITIES

Librarian

1. Prepare copies of worksheets 3.1, 3.2, 3.3, 3.4, 3.5, 5.1, and 5.2 from Problem Definition Process.
2. Introduce lesson objectives.
3. Explain thesauri structure, i.e., hierarchical arrangement and provide sample page handout.
4. Explain truncation.
5. Explain variant spellings.
6. Explain entry form of proper names.
7. Assign worksheets and explain requirements.

Student

1. Complete worksheets 3.1, 3.2, 3.3, 3.4, 3.5, 5.1, and 5.2.

RESOURCES NEEDED:

REFERENCES: Suggested thesauri: Sears List of Subject Headings, Library of Congress Subject Headings, Eric Thesaurus and Problem Definition Process

AUDIO VISUAL: Locally prepared transparencies if desired

EQUIPMENT: Overhead projector and screen

HANDOUTS:
1. Sample page from ERIC Thesaurus
2. Copies of worksheets 3.1, 3.2, 3.3, 3.4, 3.5, 5.1 and 5.2 from Problem Definition Process

EVALUATION PROCESS: Librarian will evaluate completed worksheets and/or quiz.

LESSON PLAN

LESSON OBJECTIVE: Recognize the relationship between key words (Section II, C.3).

EXPECTED LEVELS OF ACHIEVEMENT:

Student will choose key words which are related.

ACTIVITIES

Librarian

1. Prepare copies of Worksheet 6.1 of Problem Definition Process.
2. Introduce lesson objective.
3. Explain the concept of related.

Student

1. Complete Worksheet 6.1

RESOURCES NEEDED:

HANDOUTS: Worksheet 6.1 from Problem Definition Process

EVALUATION PROCESS: Librarian will evaluate the completed worksheets.

LESSON PLAN

LESSON OBJECTIVE: Use logical operators (Section II, D.1).

EXPECTED LEVEL OF ACHIEVEMENT:

Student will combine search terms with appropriate logical operators to define and limit a topic.

ACTIVITIES

Librarian

1. Prepare copies of Handout 6.2 and Worksheets 6.2 and 6.3 from Problem Definition Process
2. Introduce lesson objective.
3. Explain Boolean operators (logic) using Venn diagrams.
4. Explain positional operators.
5. Assign worksheets and/or quiz.

Student

1. Complete worksheets 6.2 and 6.3

RESOURCES NEEDED:

REFERENCES: DIALOG Student Workbook, BRS/SEARCH Service Video Training Course Workbook, Problem Definition Process

HANDOUTS:
1. Copies of Worksheets 6.2, 6.3, and Handout 6.2 from Problem Definition Process
2. Final worksheets and quiz

AUDIO VISUAL: Locally produced transparencies

EQUIPMENT: Overhead projector

EVALUATION PROCESS: Instructor will evaluate completed worksheets and/or quiz.

LESSON PLAN

LESSON OBJECTIVE: Illustrate the differences between free-text and controlled-vocabulary searching (Section II, E.1).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will distinguish between free-text and controlled-vocabulary searching.

ACTIVITIES

Librarian

1. Prepare sample printouts of free-text searching and controlled-vocabulary searching.
2. Review lesson objective.
3. Using printouts, show students examples of free-text searching and controlled-vocabulary searching.
4. Discuss differences between searches.

Student

1. On a given topic, write examples of a free-text search and a controlled-vocabulary search.

RESOURCES NEEDED:

HANDOUTS: Printouts of a free-text search and a controlled-vocabulary search

EVALUATION PROCESS: Librarian will evaluate the examples completed by the student.

LESSON PLAN

LESSON OBJECTIVE: Use basic system protocol required for online searching (Section II, F.1).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will prepare a basic search strategy using system protocol.

ACTIVITIES

Librarian

1. Introduce lesson objective.
2. Explain format of basic search statement(s) using key words and logical operators.
3. Explain meaning of numerical results.
4. Explain printing of sample records.
5. Explain the student assignment.

Student

1. Prepare a basic search strategy using system protocol.

RESOURCES NEEDED:

HANDOUTS: Documentation from vendor

Search strategy worksheet (from BRS/SEARCH Service Video Training Course Part 2 Workbook, p. 45)

EVALUATION PROCESS: Student search strategy must demonstrat proper sequence of steps.

LESSON PLAN

LESSON OBJECTIVE: Demonstrate proper advanced searching techniques (Section II, G.1).

EXPECTED LEVEL OF ACHIEVEMENT:

Student will prepare a search using advanced searching techniques.

ACTIVITIES

Librarian

1. Using BRS videos, demonstrate proper advanced searching techniques including limiting searching to specific paragraphs or fields, changing databases, saving searches, and using features such as expand/root, display, wild card truncation, LINK, and CROS.

2. Using librarian generated transparencies, show various functions of advanced searching.

Student

1. Write a search incorporating at least two functions of advanced searching techniques.

RESOURCES NEEDED:

REFERENCES: BRS/SEARCH Service Video Training Course workbooks
DIALOG manuals

AUDIO VISUAL: BRS/SEARCH Service Video Training Course, Parts 2 & 3
Locally-produced transparencies.

EQUIPMENT: Overhead projector, screen, VCR, and monitor

EVALUATION PROCESS: Librarian review of student designed search strategies.

LESSON PLAN

LESSON OBJECTIVE: Locate, identify and use special function keys to break printing and correct errors (Section III, A.1).

EXPECTED LEVEL OF ACHIEVEMENT:

Student will demonstrate competency in the use of special function keys.

ACTIVITIES

Librarian

1. Prepare transparencies.

2. Using computer equipment and/or transparency of keyboard chart, demonstrate and/or explain the function of the following keys and when they are used:

   a. BREAK

      - To stop printing online. [On some terminals there is a break key. On others, holding down control/alternate key and another key acts as a break. On still others, depending on the software, a break key can be user-defined.]

   b. BACKSPACE

      - To correct errors. [To backspace on most equipment, use the backspace key. NOTE: On some equipment, control H or a left arrow-key will also work. Once you have backspaced, re-enter all characters from that point on.]

   c. LINE DELETION

      - To erase an entire line before sending to vendor. [On BRS, type "?" and (enter key). On DIALOG, hit escape key then (enter key).]

   d. CARRIAGE RETURN/ENTER

      - To send search statement to vendor. [In documentation, often indicated by (enter key) or cr .]

Student

1. Participate in a discussion or lecture concerning special function keys.

2. Orally identify keys and their functions using either computer equipment or transparencies.

RESOURCES NEEDED:

REFERENCES: BRS/Search System User's Manual
Searching DIALOG The Complete Guide

AUDIO VISUAL: Transparencies
Keyboard Chart

EQUIPMENT: Overhead projector and screen, and microcomputer or terminal

EVALUATION PROCESS: Student will indicate the use of each key on keyboard chart or on equipment.

LESSON PLAN

LESSON OBJECTIVE: Discuss the log-on/log-off procedure and the importance of passwords (Section III, B.1-3).

EXPECTED LEVEL OF ACHIEVEMENT:

The student will:

1. Discuss communications package and log-on/log-off procedures.
2. Demonstrate an awareness of the importance of system security.

ACTIVITIES

Librarian

1. Utilize transparencies to show log-on/loG-off procedures.
2. Discuss passwords and why they are needed.
3. Discuss security passwords.

Student

1. Participate in discussion of passwords.
2. Identify the log-on/log-off procedure.
3. Explain the importance of system security.

RESOURCES NEEDED: BRS/SEARCH System User's Manual
Searching DIALOG the Complete Guide

AUDIO VISUAL: Locally produced transparencies

EQUIPMENT: Overhead projector and screen

EVALUATION PROCESS: Librarian evaluation of class discussion.

LESSON PLAN

LESSON OBJECTIVE: Student will demonstrate skills in writing an effective search strategy (Section III, C.1).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will write an effective strategy with alternatives for narrowing and broadening the online search.

ACTIVITIES

Librarian

1. Provide worksheet and directions.

2. Monitor and assist students as needed.

Student

1. Fill out BRS search strategy worksheet or similar one with a section for alternative strategies to narrow and broaden.

2. Select appropriate databases.

RESOURCES NEEDED:

REFERENCES: BRS/SEARCH System User's Manual
Searching DIALOG the Complete Guide
Database guide sheets
Thesauri
General reference books

HANDOUT: BRS Search Strategy Worksheet or a similar locally produced worksheet

EVALUATION PROCESS: Librarian will evaluate the written search strategy and choice of databases.

LESSON PLAN

LESSON OBJECTIVE: Execute an online search (Section III, D.1).

EXPECTED LEVEL OF ACHIEVEMENT:

Student will execute an online search using the strategy he/she developed and print a sampling of citations.

ACTIVITIES

Librarian

1. Monitor student as he/she executes a search, assisting as needed; or execute the search for the student.

2. Instruct student on how to determine whether the search must be narrowed or broadened.

Student

1. Execute (or watch as librarian executes) an online search.

2. Identify whether the search must be narrowed or broadened.

RESOURCES NEEDED:
1. BRS/SEARCH System User's Manual
2. Searching DIALOG the Complete Guide

EQUIPMENT: Computer, modem, telephone line, printer, communications software

EVALUATION PROCESS: Librarian will evaluate the execution of the search.

LESSON PLAN

LESSON OBJECTIVE: Identify common errors in search strategies (Section III, E.1).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will identify and correct improper search strategies.
2. Student will use alternate search strategies as needed when online.

ACTIVITIES

Librarian

1. Monitor students:
   a. offline as they complete worksheet, or
   b. online as they execute a search.
2. Provide copies of worksheet from page 37.

Student

1. Complete the worksheet entitled "Common Errors in Searching Worksheet".
2. Identify and correct common errors in search strategies while online.

RESOURCES NEEDED:

REFERENCES: BRS/SEARCH System User's Manual
Searching DIALOG the Complete Guide
Thesauri

EQUIPMENT: Microcomputer, modem, printer, communication software

HANDOUT: "Common Errors in Searching Worksheet" (see page 37)

EVALUATION PROCESS: Librarian evaluation of online search and/or worksheet and observation of student when online.

COMMON ERRORS IN SEARCHING WORKSHEET

Describe what is wrong with the following search statements:

1. Polar$
2. Emotional adj disturbances or mental disorders
3. The adj history adj of adj education.ti.
4. Women's with liberat$3
5. Quality with of with life
6. Learning disabilities with reading
7. Virginia not West Virginia
8. Suburben adj housing
9. Recreational adj activites
10. The 1970's: problems & dilemmas.ti.

Find the errors in the following search strategies:

Example 1

1: Computer$1 with Keyboard$3
2: 1 and elementary education
3: ..L/2 yr 84

Example 2

1: Anorexia or bulimia
2: 1 and girl$1 or female$1

Example 3

1: Hemingway-Ernest$
2: Judy-Blume$

Example 4

1: Online searche$3
2: 1 and technology$3
3: ..L/2 YR 85
..L/2 YR > 85

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ANSWER SHEET FOR "COMMON ERRORS
IN SEARCHING WORKSHEET"

Search Statements

1. Use a numerical limiter after the truncation symbol.

2. The space between the last two words assumes the "or" relationship where a positional operator is needed.

3. Eliminate the stopwords "the" and "of"; therefore, also eliminating the first adj listed.

4. The system doesn't search punctuation.

5. The system doesn't search stopwords.

6. The space assumes the "or" relationship where a positional operator is needed.

7. The space assumes the "not" relationship where a positional operator is needed.

8. Misspelled word (suburban).

9. Misspelled word (activities).

10. The system doesn't search punctuation or stopwords.

Search Strategies

1. The space between the two words in statement 2 assumes the relationship of the previous operator "and". The positional operator "adj" is needed here.

2. Nesting of terms is needed in statement 2 [e.g., (girl$1 or female$1)]. Without that the "and" operator refers to just the first word and the other word is considered separately.

3. Authors are searched last name first. This is the only instance where it is safe not to use a numerical limiter with the truncation symbol.

4. The space between the words in the first statement assumes the "or" relationship. A positional operator (same, with, adj) is needed for the correct use of these words.

LESSON PLAN

LESSON OBJECTIVE: Discuss terminal log and student record sheet (Section IV, A.1-2).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will complete a log and a student search record sheet.

2. Student will identify parts of log and explain terminology in log-on/log-off messages.

ACTIVITIES

Librarian

1. Prepare transparencies of terminal log and student record sheet (see Appendices C and D).

2. Introduce record management and its importance.

3. Distribute copies of student record sheets and terminal log.

4. Explain and complete a sample terminal log and student record sheet: name, date, databases used, cost, time, other.

5. Explain log-on/log-off terms.

6. Explain running totals.

Student

1. Complete worksheets.

2. After an online search is finished, complete terminal log and individual record sheet.

RESOURCES NEEDED:

AUDIO VISUAL: Transparencies of sample terminal log and student record sheet

EQUIPMENT: Overhead projector and screen

HANDOUTS: Librarian prepared worksheet

EVALUATION PROCESS:
1. Librarian evaluation of completed log and record sheets.
2. Librarian evaluation of computer worksheets.

LESSON PLAN

LESSON OBJECTIVE: Evaluate printout for relevant citations (Section IV, B.1 and B.2).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will identify fields in a sample search.

2. Student will identify relevant citations from his/her own search.

ACTIVITIES

Librarian

1. Prepare a worksheet of a sample search which permits students to identify citation fields.

2. Review fields in citations:

   a. accession number
   b. author
   c. title
   d. source, date
   e. abstract
   f. descriptors, identifiers
   g. language
   h. price
   i. other

2. Define relevant (those items which could possibly be used in the development of the topic).

3. Using sample printout, discuss each citation and the fields which are used to determine it as relevant or irrelevant.

4. Distribute copies of Appendix E (Search Evaluation Report).

Student

1. Using individual student search results, mark each citation printout as relevant or irrelevant.

2. Complete Search Evaluation Report.

RESOURCES NEEDED:

AUDIO VISUAL: Transparencies of sample printout

EQUIPMENT: Overhead projector and screen

HANDOUTS: Sample printout
Teacher prepared worksheet
Student individual search results

EVALUATION
PROCESS: 1. Librarian evaluation of completed search Evaluation Report.

LESSON PLAN

LESSON OBJECTIVE: Determine cost-effectiveness of online searching (Section IV, C.1-2).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will participate in a discussion regarding the relationship between the need for an online search and limited financial resources.

2. Student will compute the cost-effectiveness of his/her own search.

ACTIVITIES

Librarian

1. Discuss the costs of online searching and its impact on limited financial resources.

2. Explain cost-effectiveness formula (total cost/number of relevant citations).

3. Demonstrate use of cost-effectiveness formula using sample search printout.

Student

1. Count the number of relevant citations.

2. Complete calculation of cost-effectiveness of an online search.

RESOURCES NEEDED:

AUDIO VISUAL: Transparency of sample search

EQUIPMENT: Overhead projector and screen

HANDOUTS: Sample search handouts
Student individual search results

EVALUATION PROCESS: Librarian/student evaluation of individual printouts and calculation.

LESSON PLAN

LESSON OBJECTIVE: Identify relevance of documents retrieved (Section IV, D.1-5).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will identify local and outside sources for document retrieval.
2. Student will list relevant items which can be obtained from outside sources.
3. Student will obtain at least one item from an outside source and estimate the cost of retrieval.
4. Student will demonstrate the importance of planning and being responsible for interlibrary loan.
5. Student will identify the parameters as stated in the copyright laws for using and copying the work of others.

ACTIVITIES

Librarian

1. Discuss availability of local library resources.
2. Explain resource-sharing emphasizing LIN-TEL and ACCESS PENNSYLVANIA.
3. Discuss costs of resource-sharing.
4. Discuss time factor and borrower responsibilities.
5. Discuss copyright law and plagiarism.

Student

1. Compile a list of outside sources which can be utilized for document retrieval and/or interlibrary loan.
2. Obtain at least one item from an outside source and estimate the cost.
3. Discuss copyright laws and plagiarism.

RESOURCES NEEDED:

REFERENCES: Pennsylvania Interlibrary Loan Code
Excerpts of copyright law
Reed, Mary Hutchings, The Copyright Primer for Librarians and Educators. (ALA and NEA, 1987)

HANDOUTS: List of resources
List of resource costs
Quiz (optional)

EVALUATION PROCESS:

1. Librarian evaluation of the student's interlibrary loan process.

2. Librarian check of documents obtained.

3. Librarian/teacher evaluation of student's list of relevant items.

R.4

LESSON PLAN

LESSON OBJECTIVE: Review search strategy to improve the number of relevant citations (Section IV, E.1).

EXPECTED LEVEL OF ACHIEVEMENT:

Student will prioritize possible revisions of a sample search and identify ways of altering the strategy to improve the number of relevant citations.

ACTIVITIES

Librarian

1. Review original search strategy of a sample search.

2. Identify changes in strategy which could have been made.

   a. other databases
   b other key words, synonyms
   c. other techniques, features, e.g., limiting by date or language, paragraph qualification
   d. revised logic, e.g., using nesting or different logical operation

3. Lead discussion of changes and how they might affect search results.

4. Prioritize identified changes for sample search.

Student

1. Participate in discussion and identify changes which might be made.

2. Prepare a prioritized list of changes which could be made to an individual search strategy to improve the number of citations.

RESOURCES NEEDED:

AUDIO VISUAL: Transparency of original search strategy

EQUIPMENT: Overhead projector and screen

HANDOUTS:
1. Original search strategy for a sample search
2. Individual student search printouts

EVALUATION PROCESS:
1. Observation of student participation in class discussion.
2. Librarian review and evaluation of student's prioritized listing.

LESSON PLAN

LESSON OBJECTIVE: Compare the results of a manual search to the results of a similar online search (Section IV, F.1-2).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will list the advantages and disadvantages of online database searching.

2. Student will compare citations from a manual search to those retrieved from an online search.

ACTIVITIES

Librarian

1. Review the advantages and disadvantages of online searching.

2. Divide students into groups and supervise group work/assignments.

3. Direct discussion of the comparison of the results of the two searches.

Student

1. Prepare a list of advantages and disadvantages of online searching.

2. Using a previous manual search, participate in a discussion and explain differences found between the two searches (especially quality, quantity, currency, access, and cost).

RESOURCES NEEDED:

REFERENCES: Indexes, encyclopedias, card catalog, vertical file, ACCESS PENNSYLVANIA database

AUDIO VISUAL: Transparency of sample search printout

EQUIPMENT: Overhead projector and screen

HANDOUTS: Sample search printouts

EVALUATION PROCESS: 1. Librarian evaluation of student's list of the advantages and disadvantages of online database searching and participation in the class discussion.

LESSON PLAN

LESSON OBJECTIVE: Utilize retrieved materials (Section IV, G.1).

EXPECTED LEVEL OF ACHIEVEMENT:

1. Student will list each item retrieved and determine its actual use in the final paper and bibliography.

ACTIVITIES

Librarian

1. Direct student activities involved in completion of final paper or bibliography.

Student

1. List each item retrieved and determine its actual use in the final paper and bibliography.

RESOURCES NEEDED:

REFERENCES: Student's retrieved items

EVALUATION PROCESS: Librarian/teacher will evaluate the list of retrieved materials and the student's evaluation of their use in the final paper and bibliography.

SECTION II - Online Management

INTRODUCTION

After the decision has been made to teach online searching skills, the librarian must assess the availability of the resources needed to implement the program. In many instances, some or all of the necessary hardware and software needed to go online may already be in place in the library. The librarian should also utilize any available faculty expertise or other departments in the school using online technology, e.g.: the guidance department utilizing GIS (Guidance Information System).

As with all effective management, extensive planning and research is necessary. Consideration must be given to budgeting, the selection of appropriate databases, telecommunication costs, and integration into the curriculum. The ethical use of databases, and laws effecting copyright and confidentiality, also need to be addressed.

Document retrieval and interlibrary loan procedures must also be established in order to complete the online searching cycle.

Technological changes in traditional library services necessitate educating library patrons and taxpayers. An active public relations campaign helps to accomplish this goal and to establish a support base for continued funding.

VENDORS

Before a database vendor is selected, the needs of the school library media program must be taken into account. After ascertaining the goals of the online program, there are six general technical areas to consider before selection is made:

- Support of curricular/informational needs
- Ease of use
- Cost
- Availability of training/support materials
- Reliability and timeliness of database information
- Document retrieval

After a database vendor is selected, contracts must be established. Contract options vary widely. The simplest contract usually involves no start-up fee and requires neither prepayment nor usage guarantee and involves simply a monthly charge for the connect time, telecommunications time, and citation charges.

Some systems automatically discount all accounts after a certain level of usage each month. Most vendors offer higher discount rates in exchange for prepayment or a user guarantee and offer special rates to schools for student training, demonstrations, and usage during off hours.

Selective List of Major Vendors

BRS Information Technologies
A Division of Maxwell Online, Inc.
8000 Westpark Drive
McLean, VA 22102
(800) 345-4277

BRS has over 150 different databases or files available to its users. Users can either subscribe on a contract basis or pay an initial fee plus hourly database connect charges. In addition to Educator rates for professionals in a K-12 situation, special classroom instruction rates are also available. Off-hours searching is available at reduced rates through "BRS After Dark." BRS also offers a medical literature and information service for physicians through "Colleague."

CompuServe
5000 Arlington Center Boulevard
P.O Box 20212
Columbus, OH 43220
(800) 848-8199

CompuServe began in 1972 and is a subsidiary of H and R Block, Inc. It was started as a data processing "time-sharing" service. In 1979 access to their computer was made available to computer hobbyists, allowing users to access the computer's idle capacity during nonbusiness hours. CompuServe has now grown to provide electronic mail, magazine articles, weather information, air craft flight planning, a form of electronic CB communication, commodity and stock information, special interest bulletin board, ability to download software, home banking, electronic shopping, college selection, online World Book Encyclopedia reference, and games.

DIALOG Information Services, Inc.
3460 Hillview Avenue
Palo Alto, CA 94304
(800) 334-2564

Beginning in 1972, DIALOG now has more than 375 different databases available to its users. No initial fee is required. Users pay per database connect hour used plus telecommunications charges. Classroom instruction rates are available. A student program, with supportive classroom material, called Classmate, is also available.

Dow Jones News/Retrieval Service
P.O. Box 300
Princeton, NJ 08543-0300
(800) 522-3567

The Dow Jones/News Retrieval Service (DJNS) was started in 1974 as a service to stock brokerage houses and professional investors. The service began to expand in 1980 to meet the needs of the whole family while maintaining an emphasis on in-depth financial assistance. All subscribers can secure stock quotations with only a 15 minute delay from hour activity. Other features include UPI world report, Wall Street Journal highlights, weather reports, electronic shopping, movie reviews, in-depth financial information with current and historical, text search (by key words of articles from Barron's, Wall Street Journal and Dow Jones News Service), online encyclopedia searching, etc. Educators are offered a flat rate per terminal access with no extra charges.

SOURCE Telecomputing Corp.
1616 Anderson Road
McLean, PA 22102
(800) 243-1373

The SOURCE began in 1979 and was purchased by Reader's Digest in 1981. The SOURCE offers over 1200 features and programs that are of general interest and marketed to a broadbase of the public. Some of the features are electronic mail, UPI news, abstracts from magazines, stock and commodity averages, programming, games, electronic shopping, travel schedules and tickets, movie reviews, electronic typesetting, etc. There is a minimum monthly fee plus an installation fee. Special rates apply after dark.

Wilsonline
H.W. Wilson, Inc.
950 University Avenue
Bronx, NY 10452
(800) 367-6770

Beginning in 1983, the H.W. Wilson Company began making its indexes, including the Reader's Guide to Periodical Literature, available to online users. Subscribers must contract on a yearly basis for projected use. Rates vary by amount and use and whether the user subscribes to the print equivalent. Classroom instruction rates are available. There is a basic connect time charge with no royalty fees or start-up fees.

Additional sources for locating vendors of database services can be found in the bibliography.

BUDGET AND COSTS

Online reference services entail costs above and beyond those of traditional reference and general library services. Online searching requires special professional skills, additional policies, and financial considerations, including the cost of computer hardware and software. An important component of any online search service is a creative, flexible, and relevant budget which should always be a consideration in a district's long range plan.

The costs involved in online searching can be divided into two categories: direct and indirect. Direct costs are those incurred during an online search session. Indirect costs include all other expenses.

Monies to run online programs can come from sources such as: local school district budgets, federal monies, pilot project funds, state level funds, or local community service agencies. There is always the option of charging fees for online searches executed. If a small fee is charged to go online, the program costs to the school district could be reduced accordingly.

Sample Online Budget

Budget items in Parts I and II may be considered start-up costs, while items in Parts III-VI should be considered as ongoing yearly expenses. *

I.	Equipment and software	
A.	Microcomputer, monitor, keyboard, and interface card	$2,200
B.	Printer and cables	$ 450
C.	Modem	$ 400
D.	Phone installation	$ 200
E.	Surge suppressors	$ 50
F.	Communications software package	$ 150
II.	Online Center	
A.	Work station	$ 300
B.	Static Mat	$ 15
III.	Supplies and Documentation/References	
A.	Computer paper	$ 75
B.	Ribbons	$ 30
C.	Floppy disks	$ 25
D.	Equipment cleaners	$ 30
E.	Thesauri	$ 50
F.	Database guides	$ 20
G.	Pertinent periodicals	$ 100
IV.	Training Costs	
A.	Databases training/seminars	(check with vendors)
B.	Travel	
C.	Cost for substitute	
V.	Operating Costs	
A.	Online searching (connect time and telecommunications)	$ 500
B.	Maintenance contracts	$ 200
C.	Monthly telephone costs (possible long distance charges)	$ 180
VI.	In-Service Programs	
A.	Handouts	$ 20
B.	Online demonstration time	$ 100

* Costs may vary

GATEWAY PRODUCTS

Gateway products enable the user to interact with a variety of commercial database systems. The intent is to simplify searching techniques and to eliminate the establishment of individual vendor accounts.

Among the packages offered are Easynet, Einstein, Sci-Mate, and Searchlink. For background information on these and other gateway products see:

Epler. Online Searching Goes to School, 1989.
Glossbrenner. How to Look It Up Online, 1987.
Palmer. Online Reference and Information Retrieval, 1987.

NOTE: For full citation see the bibliography in Appendix H.

TELECOMMUNICATIONS

Several companies have developed systems that will interconnect many database vendors through telephone lines and modems. These connections are called the telecommunications network. A node is a terminal or computer capable of telecommunicating in this network, which can route calls to the main computer thus reducing long distance calls. The total cost involved in the utilization of this service is determined by the distance of the node from the user. The cost includes a flat connect hour charge plus any applicable telephone charges. Most of these systems have an 800 telephone number that is available when the user is an extremely long distance from a node. Some additional costs result from using the 800 number but can, in many instances, be less expensive than long distance charges.

The major companies supplying this type of service are:

1. TELENET
   12490 Sunrise Valley Drive
   Reston, VA 22090
   1-800-336-0437

2. TYMNET
   2070 Chainbridge Road
   Vienna, VA 22180
   1-800-336-0149

3. EASYLINK
   Western Union Telemarketing Center
   4320 Alpha Road
   Suite 100
   Dallas, TX 75244
   1-800-243-1373

These systems all provide the same basic networking communication services and differ only in cost, node location, and a few sign-on procedures. The charges for these services normally appear on the invoices from the database vendor.

COPYRIGHT

Current changes in the quantity, quality, format, and delivery of information dictate a rapidly evolving role for librarians dedicated to meeting the diverse needs of users in an information society. But regardless of how information is retrieved, copyright laws must be followed.

Bibliographic output from online searches frequently results in interlibrary loan transactions. Other technologies such as compact discs, cable, photocopying, video, and audio cassettes also require attention to copyright laws by all members of the school community. Restrictions vary from one technology and its use to another. The statements that follow are intended as guidelines only. It is the professional responsibility of each librarian to be aware of the Copyright Law, any changes and emerging issues pertaining to the law, and to abide by the law.

Librarians must be aware that information retrieval from online databases is usually protected by the Copyright Law. Most databases permit or authorize one-time use of information retrieved from their files by a single end-user. However, sale or wide distribution of search results may not be permitted. As copyright restrictions are often database specific, librarians should review instructions for each database producer or vendor before searching and utilizing the results. Inquiries concerning the search results for educational purposes should be made directly to the database producer or vendor.

For further information on these issues, consult publications and updates from the Copyright Office of the Library of Congress. The Copyright Primer for Librarians and Educators by Mary Hutchings Reed (ALA and NEA, 1987) is another good source with an easy-to-understand format of questions and answers.

SECURITY

There are five major areas of security to be considered when preparing to start an online curriculum or service.

1. Equipment
2. Software
3. Telephone access
4. Passwords
5. Confidentiality

The first three items may be covered by current institutional policies governing how security must be maintained. If not, plans must be made to protect these items from theft and/or misuse.

However, security for passwords and confidentiality must also be addressed before any log-on procedures take place. A password is like a blank check, since it allows the user access to online searching while all charges are being added to the institution's bill. Caution should be taken so that only authorized users have access to the password. The secondary level password can be changed as often as necessary. This procedure will strengthen security. Contact your telecommunications carrier (Telenet, etc.) or database vendor for password masking procedures. They can provide you with the proper security procedure for your computer system.

The Library Records interpretation of the Library Bill of Rights and the American Library Association's Code of Ethics protect the confidentiality of library patron transactions. In addition, Pennsylvania's Act 90 prohibits listing of specific patron records. Through all phases of the online search, care must be taken to protect the confidentiality of the patron. When keeping logs or records of online searches performed, it is imperative that the identification of the requestor be protected.

RECORD MANAGEMENT

Record management is an essential part of teaching online searching skills. Data collected and then summarized can be used to evaluate current use, predict future use, and make both programmatic and financial decisions. Three types of record forms are recommended for use:

1. Individual Search Record Sheet (See Appendix C)

   This record sheet is completed by each user when the search is finished. It should contain an assigned search number, date, user's name, research topic, databases used, connect time, and costs.

2. Online Usage Report (See Appendix D)

   This log sheet is completed by the librarian and summarizes the information from the users' search record sheets. To maintain confidentiality of the searches, assigned search numbers should be recorded instead of names. Other information on this log should include databases used, connect time, and total charges. This information can also be extracted from monthly vendor bills. These usage reports can be summarized as needed.

3. Search Evaluation Report (See Appendix E)

   This form documents the success of the user in obtaining relevant and useful information. The report should include number of citations, number of relevant citations, number of citations retrieved on site, number of citations retrieved off site, and number of citations used in research project. The nature of this report presumes the user will need time for its completion. An information function of this form is to provide supportive evidence of the benefits of integrating the online program into the curriculum.

RESOURCE SHARING NETWORKS

Providing students, staff, or library patrons with the documents found through online searching is paramount to the information seeking process. A large percentage of documents found in online databases, due to their specific and sometimes technical nature, will not be found in the local library. No school library media program today can provide all the resources its students need. Making students aware of other resources via online searching naturally leads to providing those resources to the students. Students should not be denied access to materials due to the locale of their school or the responsiveness of their school library collection.

Cooperative agreements should be developed among various types of libraries to maximize the potential of online database sources. An example of this would be a collaborative resource sharing network among several school, public, and academic libraries in a geographical area. This type of network has been developed in the ACCESS PENNSYLVANIA Project. However, belonging to a well established resource-sharing network like ACCESS PENNSYLVANIA is not necessary to participate in interlibrary loan.

The various types of networks are:

1. ACCESS PENNSYLVANIA Statewide Database Program.
2. Local consortia.
3. LIN-TEL.
4. District Libraries.

1. ACCESS PENNSYLVANIA Database Project

History of ACCESS PENNSYLVANIA

The ACCESS PENNSYLVANIA Statewide database is a program which brings millions of resources to the hands of school students without the need for them to leave their school libraries. With ACCESS PENNSYLVANIA, a Pennsylvania school student can search the card catalogs of hundreds of libraries in the state from a computer in his or her library and can arrange to have any of those resources delivered through an interlibrary loan network.

ACCESS PENNSYLVANIA evolved from a plan to improve library services for the citizens of Pennsylvania. Aimed at improving management and research skills, the plan was developed by the State Library of Pennsylvania and the Division of School Library Media Services of the Pennsylvania Department of Education.

The first edition of the compact disc union catalog was released in September 1986. It represented the holdings of over 100 libraries and agencies and included one university. The 1987 edition increased the number to over 200 libraries. The 1988 version increased to 340 libraries. The 1990 database contains the bibliographic holdings of 567 libraries and agencies, including 19 academic institutions. It is anticipated that by 1992, over 700 libraries will be represented on the compact laser disc database.

Significance of ACCESS PENNSYLVANIA DATABASE

The ACCESS PENNSYLVANIA Database

- is the first large-scale computerization of high school libraries in the nation using affordable technology.
- brought school libraries into a resource sharing network for the first time.
- is being modeled by other states in the nation.
- expands the average school library collection from 11,500 volumes to over 2 million unique volumes.
- uses the latest step in microcomputer mass storage technology, the compact laser disc, to store large amounts of bibliographic information.
- gives the library patron access to information in ways that were impossible with manual card catalog search methods.
- prepares students to deal with a world in which information-management and technological literacy skills have become as essential to success as reading itself.
- requires the routine library-management functions be computerized through the use of electronic circulation systems. (Books are bar coded for easy check-in and check-out. The computer generates overdue notices, fines, inventories, and other information, freeing the librarian to deal professionally with the patron.)
- has dramatically increased resource sharing among libraries in Pennsylvania.

Through teacher in-service, student instruction and integration into the curriculum, the database can help students:

- improve the quality of research papers and readings
- improve coursework planning
- prepare to deal with information technology at the college level
- develop research skills
- develop critical thinking skills
- develop information-management skills
- develop online searching skills

Application and Funding

To participate in the ACCESS PENNSYLVANIA project, schools must apply through a competitive grant process. The project was originally funded through Title III of the Library Services and Construction Act (LSCA) and local revenue. Presently, it is funded through LSCA, local revenue, and through a line item in the Governor's budget for "high school card catalog conversion."

Local revenue is required to purchase a microcomputer system and two compact disc players, install a computerized circulation system, and update the union catalog for at least five years.

Before funding is granted, a library must join a consortium to facilitate resource sharing. A consortium is a group of two or more libraries in a particular geographic region that usually share a common interlibrary loan delivery system and communication system.

For further information contact:

ACCESS PENNSYLVANIA Director
School Library Media Services Division
Pennsylvania Department of Education
333 Market Street
Harrisburg, PA 17126-0333
(717) 783-9192

2. LOCAL CONSORTIA

A consortium consisting of two or more libraries can be established for resource-sharing purposes via cooperative agreements made by the governing bodies of the libraries. However, the real impetus for establishing and implementing these agreements needs to originate with the librarians. This local network, due to proximity and familiarity with the librarians involved, should be the primary lender. The most successful interlibrary loan networks tend to be local consortia. Periodic meetings of the librarians involved are essential to develop communication and delivery logistics, thereby facilitating resource sharing.

3. LIN-TEL (Linking Information Needs - Technology, Education, Libraries)

LIN-TEL is an electronic network designed to make online database searching available to students as another method of information retrieval and to make research/resource gathering an integral part of the school library media curriculum. Students are taught how to use microcomputers to search for information in commercial databases available through BRS Information Technologies, a database vendor located in McLean, VA. These online databases allow students to search through vast amounts of information in a matter of minutes.

LIN-TEL increases the depth, breadth, and number of resources which students and teachers have available to them. Through LIN-TEL, students and teachers have access to information beyond the walls of the school library. After obtaining a list of relevant titles cited in the databases, members can utilize the electronic mail message component to request materials not available in-house. Several participating state universities serve as document retrieval support centers for this purpose. As a result, the classroom is linked to additional resources which can directly impact on the teaching/learning process.

LIN-TEL also

- provides local educational agencies with direct access to online databases of professional literature, which they can draw upon to make informed decisions about administrative and curricular matters.

- stimulates the exchange of information among educational institutions and with the Pennsylvania Department of Education. Network members include

    - Public elementary and secondary school libraries
    - Intermediate units
    - Community colleges
    - Institutions of higher education
    - Curriculum centers
    - Public libraries
    - Vocational-technical schools
    - Nonpublic schools

The Department of Education supports LIN-TEL's development by defraying limited costs of computer time for each site and by providing training for all network members. To participate, local agencies must have access to a terminal or computer with a modem. The modem allows members to use ordinary telephone lines for communications purposes.

Membership in the LIN-TEL project provides librarians with several support services.

1. Training - School librarians are trained in online bibliographic searching.

2. Document Retrieval - Refer to Appendix G for procedures for this service.

3. User Meetings - Periodic meetings are held with LIN-TEL librarians to share teaching techniques and receive training on new databases or searching methods.

4. Telephone Support - Both PDE and BRS have toll-free numbers to contact for immediate assistance.

5. Quarterly newsletters - Provide up-to-date information to all LIN-TEL members.

PDE conducts an annual LIN-TEL Student Search-Off Contest at the spring Pennsylvania School Librarians Association (PSLA) conference. Each LIN-TEL site is encouraged to conduct an online searching contest at the local level and choose the best student searches to compete in the statewide contest. The School Library Media Services staff of PDE then reviews the entries and chooses three outstanding searches. The three contestants and their librarians are guests at the PSLA Conference where a topic is given to the finalists to search on BRS databases. After an hour of searching, students give their printouts to a panel of judges for review. Students receive trophies, small cash awards, and certificates. Publicity from this event helps to promote online searching at both the local and state levels.

4. DISTRICT LIBRARY CENTERS

The Pennsylvania public libraries have a system in place for borrowing from each other. If no local consortium can be established, any school librarian can contact her/his closest public library. Requests will be filled locally or forwarded to the district library center and processed as an interlibrary loan.

INTERLIBRARY LOAN

Since the process of document retrieval involves borrowing resources not owned by the requesting school library, the Pennsylvania Interlibrary Loan Code should be endorsed and referred to as a procedure manual for borrowing materials. A copy of this document is available from the State Library of Pennsylvania, Box 1601, Harrisburg, PA 17126-0333.

Any local resource sharing network should develop a written policy and/or procedures manual. This helps to clarify the extent of the librarian's responsibilities and delineates local requesting and delivery methods.

Regardless of what type of resource sharing network a library participates in, the following four fundamentals should be observed:

1. All requests should be closely monitored to be certain that they are valid interlibrary loan requests. Materials may already be available in another part of a book or in a reference tool located in the borrower's library and, therefore, should not be requested via ILL.

2. Locally adopted interlibrary loan procedures, as well as the endorsed Pennsylvania Interlibrary Loan Code, must be followed.

3. Accurate records of items borrowed and loaned must be kept.

4. Interlibrary loan must be a two-way street ... RECIPROCATE!

Options for initiating requests and delivering materials include

1. Electronic mail (E-Mail)

2. Telefacsimile (FAX)

3. U.S. mail

4. Local truck delivery (Intermediate Unit services)

5. Interlibrary Delivery Service (IDS)

6. Telephone

Each network needs to analyze these options and choose those methods most appropriate and affordable to their member libraries.

PUBLIC RELATIONS

School librarians often need help to "sell" the idea of including online searching in the services and curriculum of the library. The following ideas are provided to assist in this effort.

Why Initiate an Online Searching Program?

1. To provide more resources to students on a wider variety of subjects.

2. To provide hard-to-find, specialized, or technical information not readily available in the local library.

3. To cost effectively provide information resources beyond the scope of the school library's budget and typical curricular needs.

4. To help students develop valuable information-management skills to enhance their research competencies.

5. To provide current and up-to-date information on a topic.

6. To develop student appreciation for the computer as a powerful information gathering tool.

7. To enhance students' critical thinking and problem solving skills.

8. To provide equal access to information regardless of location of the school and its budget.

9. To better support the curriculum.

10. To provide resources and information for professional staff development.

How to Initiate an Online Searching Program

Online searching must be "sold" to the administrators, school board, or other governing body. The following suggestions are ways to prepare for the arrival of this tremendous research tool.

1. Take administrators to a LIN-TEL site and let them see a demonstration of online searching.

2. Keep statistics on requests that go unfilled due to lack of information in the school library (a needs assessment study).

3. Obtain PDE pamphlets and written articles or publications on online searching in schools.

4. Prepare a written justification and budget for the administration (PDE staff can provide help with a budget).

5. Elicit parent, teacher, and student body support.

6. Demonstrate to administrators how online searching integrates with the curriculum.

7. Elicit local business or service organizations for help with funding.

8. Show the videotape Going Online (cited in the bibliography) to administrators, teachers, students, and parents.

How to Continue to Promote Online Searching Service

After the librarian is trained in online searching and has equipment in place, teachers become the primary target group in promoting the online reference service. When teachers are convinced that online searching makes a significant difference in their students' research and information-management skills they will promote these services to their students and other staff. Some ways to spark interest in these services with teachers are

1. In-service workshops,
2. Demonstrations,
3. Open house/tea,
4. Assistance with college coursework,
5. Newsletters and usage reports,
6. Bulletin boards in teachers' lounge.

Department chairpersons, head teachers, curriculum committees, or other supervising groups need to be especially courted. These people need to understand the goals, objectives, and extent of online searching services.

The librarian should meet with the curriculum committee to decide where units of instruction on online searching are warranted and where a brief introduction to these services are needed. The librarian needs to be the initiator and promoter with the teachers. The units of instruction need to be integrated with the existing classroom curriculum.

Other promotional techniques are:

1. Provide demonstration for the school board,
2. Give a demonstration to parents' groups,
3. Utilize these services with clubs - computer club, speech and debate clubs,
4. Advertise student search-off,
5. Give local newspaper, radio, or TV information about these services,
6. Create bulletin boards and other displays,
7. Promote the service through monthly and annual reports.

ALTERNATIVES TO ONLINE

The online curriculum, as it is presented in this guide, requires access to an online database. It is possible, however, to introduce students to the world of information and online searching without implementation of the full curriculum. However, the following skills cannot be addressed without appropriate hardware

II.F	Basic System Protocol
II.G	Advanced System Protocol
III.A	Special Function Keys
III.B	Logging On and Off
III.D	Online Search

It is suggested that librarians who wish to adapt the curriculum, obtain sample searches and instructional materials from a source such as an online vendor or from a library with online capabilities.

The following suggestions are offered for librarians who wish to teach online searching concepts offline with a microcomputer

1. Create a small database using a commercial database program such as "PFS File," "DB Master," DataPerfect," dBase III", or "Apple Works".

   A small database, constructed by students, can be used effectively to teach database structure. When searching their databases, students will develop an awareness of the relationship of each element of a record to the database. Even if the database program that is being used does not have the capability to utilize Boolean logic, the student will begin to understand the value of Boolean logic and positional operators. For example, a student created database could be bibliographic in nature and each record could consist of seven fields: author's first name, last name, title of article, date, magazine, and two subject headings. Such a database will permit the librarian to teach many of the concepts of online searching.

2. Use small commercially available floppy disc databases such as ERIC's Microsearch.

   Small database programs, containing data which can be manipulated, are available on floppy disc. For example, ERIC Microsearch has many of the search capabilities of its much larger big brother. The only difference is that the smaller program does not operate as its big brother because of its limited size. Even though the protocol is not the same, this program can introduce students to Boolean logic and other features of ERIC. Commercially available floppy disc databases suitable for elementary and/or middle school grades include Book Brain by Oryx Press and Book Whiz by Educational Testing Service.

3. Use a word processing program to demonstrate searching.

   Most word processing programs have a global search command. This command searches through the document in the computer's memory for a particular set of characters such as a word or a phrase. For instance, using word processing, students could write articles which are placed

in the same file. The students could then search for a particular word or phrase utilizing the global search command.

4. Use a commercially available compact disc database.

Commercial compact disc databases are increasingly becoming available. Databases, such as The New Electronic Encyclopedia, offers keyword searching with the capability of combining search terms. The ERIC database on compact disc offers the same search capabilities as its online big brother. Magazine Article Summaries on CD (EBSCO) has an example of search logic on one of its initial screens. Such products can be used to teach many online searching concepts.

5. ACCESS PENNSYLVANIA Database

The ACCESS PENNSYLVANIA database can be searched by title, author, subject, keyword, location, type of material, or a combination of these. Searches can also be performed using Boolean logic and truncation. Therefore, it is a valuable tool not only for finding resources, but it can also help students learn many of the same concepts which online searching activities offer.

APPENDIX A

PENNSYLVANIA DEPARTMENT OF EDUCATION QUALITY GOALS OF EDUCATION

(1) COMMUNICATION SKILLS. Quality education shall help every student acquire communication skills of understanding, speaking, listening, reading, and writing. Objectives are:

(i) Comprehensive or oral, written, and nonverbal communication.
(ii) Composition of oral and written communication.
(iii) Interpretation of and facility with language patterns.
(iv) Comprehension and appreciation of literature and arts.
(v) Use of information sources and research techniques.

(2) MATHEMATICS. Quality education shall help every student acquire knowledge, appreciation, and skills in mathematics. Objectives are:

(i) Knowledge of numeration and computation.
(ii) Knowledge of geometry and measurement.
(iii) Knowledge of computer literacy and data management.
(iv) Development of reasoning, problem solving, and creativity.
(v) Knowledge of mathematical life skills and application.

(3) SCIENCE AND TECHNOLOGY. Quality education shall help every student acquire the knowledge, understanding, and appreciation of science and technology. Objectives are:

(i) Knowledge of basic scientific concepts and processes.
(ii) Understanding of technological applications of scientific principles.
(iii) Appreciation of interaction of science, technology, and society.
(iv) Opportunity for inquiry and hands-on activity in science and technology.
(v) Understanding and use of scientific methodology.

(4) CITIZENSHIP. Quality education shall help every student learn the history of the United States, understand its systems of government and economics, and acquire the values and attitudes necessary for responsible citizenship. Objectives are:

(i) Knowledge of histories: local, state, national, and global.
(ii) Understanding of systems of government and law.
(iii) Understanding of systems of economics.
(iv) Knowledge of individual rights and responsibilities.
(v) Knowledge of the participatory nature of the democratic system.

(5) ARTS AND THE HUMANITIES. Quality education shall help every student acquire knowledge, appreciation, and skills in the arts and the humanities. Objectives are:

(i) Comprehension of principles and concepts, in art, music craftsmanship, other discrete arts, and the humanities.
(ii) Understanding of the influence of literature, philosophy, and tradition in shaping our heritage.
(iii) Development of analytic and performing skills in the arts and the humanities.

(iv) Application of objective and aesthetic criteria to decision making.
(v) Participation in intellectual and creative experiences in the arts and humanities.

(6) ANALYTICAL THINKING. Quality education shall help every student develop analytical thinking. Objectives are:

(i) Development of information-management skills.
(ii) Development of logical thinking skills.
(iii) Development of problem solving skills.
(iv) Development of decision making skills.

(7) FAMILY LIVING. Quality education shall help every student acquire the knowledge, skills, and attitudes necessary for successful personal and family living. Objectives are:

(i) Development of personal and family relationships.
(ii) Selection, management, and maintenance of personal and family resources.
(iii) Understanding of economics of family life.
(iv) Development of consumer skills.

(8) WORK. Quality education shall help every student acquire the knowledge, skills, and attitudes necessary to become a self-supporting member of society. Objectives are:

(i) Development of career awareness.
(ii) Development of personal career planning skills.
(iii) Development of job seeking, job getting, and job keeping skills.
(iv) Development of entry level occupational skills.
(v) Development of an awareness of the dignity of work.
(vi) Development of current labor market skills to foster economic development.

(9) HEALTH. Quality education shall help every student acquire knowledge and develop practices necessary to maintain physical and emotional well-being. Objectives are:

(i) Development of personal and physical health.
(ii) Knowledge of community health, disease prevention and control.
(iii) Knowledge of human growth, development, and good nutrition.
(iv) Awareness of the dangers of tobacco, alcohol, and other drugs.
(v) Knowledge of safety and first aid skills.
(vi) Development of family and consumer health.

(10) ENVIRONMENT. Quality education shall help every student acquire the knowledge and attitudes necessary to maintain the quality of life in a balanced environment. Objectives are:

(i) Knowledge of natural and human resources.
(ii) Understanding of geographic environment: local, regional, global.
(iii) Knowledge of interrelationship and interdependence of natural and human system.

(iv) Development of personal environmental attitudes and values.
(v) Development of environmental problem solving and management skills.
(vi) Knowledge of and appropriate uses of energy.

(11) SELF-ESTEEM. Quality education shall help every student develop self-understanding and a feeling of self-worth. Objectives are:

(i) Understanding of personal strengths and limitations.
(ii) Recognition of one's personal beliefs and opinions.
(iii) Awareness of one's personal abilities, interests, and accomplishments.
(iv) Development of self-confidence.
(v) Development of personal adaptability to change.

(12) UNDERSTANDING OTHERS. Quality education shall help every student acquire knowledge of different cultures and an appreciation of the equal worth and rights of all people to include the active roles and contributions of women, minority, racial, and ethnic groups. Objectives are:

(i) Knowledge of cultural similarity and diversity.
(ii) Knowledge of individual similarity and diversity.
(iii) Development of interpersonal relationship skills.
(iv) Understanding of human interdependence.
(v) Knowledge of roles and contributions of racial and ethnic groups and women.

APPENDIX B

PRINCIPLES OF INFORMATION-MANAGEMENT: CRITICAL THINKING SKILLS

1. Finding alternatives: the process of generating new strategies to supplement or supplant previous strategies.

2. Estimating and approximating: the process of making a tentative judgment of value based on partial information.

3. Giving and getting meaning: the process of accurately transmitting and receiving ideas through written, oral, or visual messages.

4. Collecting information: the process of deciding what information is needed, selecting the most appropriate sources and ways of finding information, and gathering and recording it accurately.

5. Classifying: the process of organizing information in hierarchies according to similarities or differences.

6. Finding patterns: the process of seeking and identifying similar configurations.

7. Generalizing: the process of drawing inferences based on perceived patterns in data or experiences.

8. Sequencing: the process of organizing information or activities in a logical, linear order.

9. Using criteria: the process of making judgments based on specified standards.

10. Restructuring information: the process of translating information from one form to a more easily grasped or accessible form such as symbols, signs, summaries, models, graphs, charts, or maps.

11. Evaluating information: the process of judging information by its relevance, timeliness, completeness, accuracy, and the reliability of its source.

12. Communicating effectively: the process of using various forms of media to transmit information and ideas clearly, interestingly, and persuasively.

13. Solving problems: the process of using information-management principles to determine a correct response or to clarify an idea.

NOTE: These principles were based on the critical thinking skills which are part of THINKABOUT, an AIT video series dealing with the skills essential to learning.

APPENDIX C

SAMPLE

INDIVIDUAL SEARCH RECORD SHEET

Date _____ Search # _____

User Name _____

Research Topic _____

		Cost	Online Time
Database(s):	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	TOTAL	_____	

APPENDIX D

SAMPLE

Terminal Log: Online Usage Report

Date _____

Search Number or Searcher I.D.	Database	Total Charge	Connect Time

Totals: _____ _____

APPENDIX E

SAMPLE

SEARCH EVALUATION REPORT

Date _____

Search Number	Number of Citations	Number of Relevant Citations	Number of Relevant Citations Retrieved On-Site	Number of Relevant Citations Retrieved Off-Site	Citations Used in Research Project

APPENDIX F

Glossary

ACCESSION NUMBER - A unique identification number assigned to each record in a database.

ADVANCED SYSTEM PROTOCOLS - features including limiting, searching specific paragraphs or fields, changing databases, saving searches and using expand/root, display, wild card, LINK, and CROS.

BAUD RATE - A measure of the speed at which data moves between your terminal or personal computer and the vendor's computer.

BIBLIOGRAPHIC CITATION - Information that identifies the printed copy of a document. Includes author, title, date, pages, and name of publication.

BOOLEAN (or Logical Operators) - Commands used to show relationships between two or more search terms (AND, OR, NOT)

CITATION CHARGES - Costs incurred for printing field(s) of a record in a database.

COLLABORATIVE COLLECTION DEVELOPMENT - A joint plan for acquisitions and resource sharing between two or more libraries to strengthen individual collections.

COMMAND - An instruction to the computer to perform a particular task.

COMMUNICATIONS SOFTWARE - Computer control programs that allow computers to transmit and receive messages over telephone lines via modems.

CD-ROM - Compact disc - read only memory. An electronic storage device which can hold up to 550 megabytes of information and is read via a laser beam.

CONNECT TIME - The amount of time the terminal or personal computer is connected to the host computer.

CONSORTIUM/CONSORTIA - A group of two or more libraries in a particular geographic region that usually have common interlibrary loan delivery and communication systems.

DATABASE (or File) - A collection of information stored in machine-readable form and accessible by subscribers to an online information service.

DESCRIPTOR (or Controlled Vocabulary) - A word or phrase added to a record by an indexer to describe the subject matter of the document cited in the record.

DOCUMENTATION - The orderly presentation, organization, and communication of specialized knowledge, concerning the structure and functioning of an online database.

ELECTRONIC MAIL - A computer-based mail system that allows messages to be sent electronically to other users of that system.

ERROR MESSAGE - Message developed by the programmer to designate a variety of problems.

FIELD (paragraph) - A defined portion of a record; for example, the Title field contains the title of the document.

FULL-TEXT DATABASE - includes the author, title of the book or the journal, the title of the specific chapter or article, publication date, and the complete text of the book, chapter, or article.

GATEWAY PRODUCTS - Software which enable the user to interface with one or more online database products.

HARDWARE - The metallic or "hard" components of a microcomputer system (equipment).

INTERACTIVE VIDEO - A mode of operation in which there is a continual exchange of information between the computer and the user at a video screen.

INTERFACE CARD - A card containing circuits that permit one device to interact with another device.

INTERLIBRARY LOAN (ILL) - A transaction in which library material, or a copy of the material, is made available by one library to another upon request.

ITEMS (or Hits) - The number of records or citations meeting a specific set of searching terms.

KEYBOARD - A typewriter-like console used to transmit information into the computer.

MAINTENANCE CONTRACT - A written agreement between a user and a vendor intended to keep equipment or programs in satisfactory working order.

MICROCOMPUTER - A complete computing system, consisting of hardware and software, whose main processing blocks are made of semiconductor integrated circuits.

MODEM - A devise used to connect your computer to a telephone line for communication with a host computer. (Acronym for MOdulator - DEModulator).

MONITOR - A cathode ray tube (CRT) which displays computer output.

NODE - A point in a computer network, usually utilized for forwarding data or communications to a host computer.

OFFLINE - Computer processing which takes place after the searcher has logged off and is no longer interacting with the computer.

ONLINE - The state of being in direct, immediate communication with the computer.

ONLINE SEARCHING - The use of a computer to retrieve information from databases.

PASSWORD - A confidential identification code, used to gain access to a database service.

PRINTOUT - A printed paper copy of computer output.

PROMPT - A message on a video screen that requests the operator to enter information or a command.

PUBLIC DOMAIN - The condition of being free from copyright or patent.

RECORD (or citation) - A group of fields which comprise a complete entry.

ROYALTY CHARGES - Payment made to a database producer for the right to use the database.

SEARCH - The act of requesting the computer to respond to a specific information request.

SEARCH STRATEGY - A plan of action for accessing the information in a database and retrieving the desired items.

SEARCH TERM (or Keyword) - A word or term used to describe the subject or concepts of a search.

SOFTWARE - The set of programs, procedures, and routines used in a computer system.

STATIC MAT - A conductive device, usually placed under the computer keyboard, that when touched drains static electricity to ground.

SURGE SUPRESSORS - An electric outlet device that prevents surges and spikes of electricity on incoming power lines.

TELECOMMUNICATIONS - The electronic transmission of signals or information between computers at remote locations using telephone lines, microwaves, satellites, or fiber optic links.

TELEFASCIMILE - A system using audio tones to send printed or graphic information from one location and producing a copy of that information at another location.

TERMINAL - A data communications device which enters data into and receives data from a computer.

THESAURUS - List of controlled vocabulary terms or descriptions, usually cross-referenced and often showing relationships among terms.

TRUNCATION - A search feature which enables retrieval of keywords beginning or ending with the same letters.

VENDOR - The organization which provides computerized, online database searching services.

WORD PROCESSING - Operations including interactive information retrieval systems, management information systems, text editing, translation, and typesetting.

APPENDIX G

LIN-TEL DOCUMENT RETRIEVAL

Clarion, Mansfield, and Millersville are the three universities funded by the State Library for LIN-TEL document retrieval of ERIC microfiche and journal articles. All three universities have their journals listed on the ACCESS PENNSYLVANIA Database. The journals may be accessed in the EXPRESS mode by typing FAS in the any word field and the name of the university in the location field.

The following LIN-TEL procedures must be used when requesting documents:

1. If you are a member of a consortium which has access to a local union catalog, this source should be accessed first.

2. Each LIN-TEL member is assigned to one university as a primary document retrieval site. Journals must be retrieved from the assigned site, if available, by following the process outlined in item 5. Availability of the journal can be checked by searching the ACCESS PENNSYLVANIA database.

3. If the journal is not available at your assigned university, but is available at one of the other two LIN-TEL universities, it may be obtained directly by utilizing established LIN-TEL procedures.

4. If the journal is not available at any of the LIN-TEL universities, the request should be sent directly to the PDE Resource Center.

5. Journal articles and ERIC microfiche should be requested over the BRS electronic mail system using the following format

JOURNAL ARTICLES

- IDENTIFY YOURSELF/SCHOOL/T-NUMBER
- "PLEASE SEND THE FOLLOWING JOURNAL ARTICLE(S)"
- AUTHOR/SHORT TITLE OF ARTICLE
- NAME OF JOURNAL
- VOL/NUMBER/PAGES/DATE OF ISSUE
- ********** (BREAK BETWEEN CITATIONS)
- BRS COMMAND TO TELL SYSTEM MESSAGE IS COMPLETE

SAMPLE

```
1.  FM NEIL RICHVALSKY, PDE, T6GK
2.  PLEASE SEND THE FOLLOWING JOURNAL ARTICLES
3.  MANCALL, JACQUELINE.  TRAINING STUDENTS TO
4.  SEARCH ONLINE.
5.  DREXEL LIBRARY QUARTERLY V20 NO. 1 PP 64-84
6.  WINTER 84
7.  **********
8.  SCHACK, MARKHAM.  ELECTRONIC LINK:
9.  MEDIA & METHODS V 23 NO. 3 PP 10-11, 36
10. JAN/FEB 1987
11. ..D
```

ERIC DOCUMENTS

- IDENTIFY YOURSELF/SCHOOL/T-NUMBER
- "PLEASE SEND THE FOLLOWING ERIC DOCUMENT"
- ED NUMBER/SHORT TITLE OF DOCUMENT
- BRS COMMAND TO TELL SYSTEM MESSAGE IS COMPLETE

SAMPLE

1. FM NEIL RICHVALSKY, PDE, T6GK
2. PLEASE SEND THE FOLLOWING ERIC DOCUMENT
3. ED241028 PENNSYLVANIA GUIDELINES SCHOOL LIBRARY
4. ED198787 INDICATORS OF QUALITY FOR SCHOOL/LIBRARY
5. ..D

UTILIZE YOUR T-NUMBER AS REFLECTED IN THE LIN-TEL DIRECTORY

T-Numbers for the retrieval sites are:

Clarion University (TEØR)
Mansfield University (TEZ3)
Millersville University (TEBJ)
PDE Resource Center (T6GK)

5. ERIC microfiche and journal articles will be sent via U.S. mail. In an emergency, journal articles can be sent by telefax, but bear in mind, this increases the costs. ERIC documents will be supplied in microfiche format only.

   a. Librarians must be aware of the following problems

      1. The requested journal titles may not be available at the three universities or the State Library.

      2. Misspellings cause many requests to go unfilled.

      3. Some requests are for foreign, highly specialized science, medical, and state-related journal articles which cannot be filled anywhere in the state.

   b. Librarians should remember that some articles may not be appropriate for students due to the high technical nature of the content.

   c. Schools are reminded to abide by the Copyright Law.

   d. When requesting an ED number from ERIC, always print out the PR field to determine the availability of the document.

e. The following is a list of journals that have been requested in the past year and were not available at any of the three universities or the State Library. Please check this list before requesting document retrieval service for these journals.

Accident Analysis + Prevention
AIGE Forum
ADE Bulletin
ADFL Bulletin
Alabama Research Report
Alcohol and Alcoholism
American Health: Fitness of Body & Mind
Am. Ind. Hyg. Assoc. Journal
American Journal of Family Therapy
Annals of Behavioral Medicine
Archiv fur das Studium der Neure Sprachen uad Leteraturen
Arizona English Bulletin
Athletic Administration
Athletic Purchasing and Facilities
Australian Mathematics Teacher

B C Journal of Special Education
Blood
Br
BR. J. Haemstol
British Journal of Psychiatry
Bulletin of the Psychonomic Society
Bulletin of the Assoc. for Business Communication

Calico Journal
Canadian Journal of Concealing
Canadian Journal of Educational Communication
Canadian Journal of Zoology
Career Development of Exceptional Individuals
Chemosphere Cycle World
Child Psychiatry & Human Development
Colby Library Quarterly
Creative Child & Adult Quarterly
Cruising World

Database

English in Texas
English Studies in Canada
Environment and Chemicals in Agriculture
Epiegram Materials
Executive Educator

Focus of Learning Problems in Mathematics
Food Nutrition
For the Learning of Mathematics
Foreign Language Annuals

Gallaudet Today
Great Plains Quarterly

Higher Education in Europe
Hispania
Historic Preservation
Hoosier School Libraries
Human Communication Research

Indian Journal of Environmental Health
Instructional Science
International Fiction Review
Iowa Curriculum Bulletin

Journal of American Culture
Journal of Anxiety Disorder
Journal of Children in Contemporary Society
Journal of Classroom Interaction
Journal of Clinical Pathology
Journal of Computers and Mathematics and Science Training
Journal of Educational Television
Journal of Environmental Health
Journal of Health & Social Behavior
Journal of Instructional Development
Journal of Nervous & Mental Disease
Journal of New York State School Boards Association
Journal of Pediatric Psychology
Journal of Phytopathology
Journal of Rural & Small Schools
Journal of Staff Development
Journal of the International Association of Pupil Personnel Workers

Leisure Magazine
Linguistics
Los Angeles Magazine

MacWorld
Mathematics in Schools
Media in Education and Development
Michigan Quarterly Review
Miner. Environ.
Moral Education Forum
Motivation and Emotion

National Catholic Reporter
Nation's Schools & Colleges
Neusprachliche Mitteilungen
New Literacy History
New Orleans Review
New West
Nourelle Revue Francaise
Nucleic Acids Review

Ohio Media Spectrum
Omni

Peterson's Photography
Planning and Changing
Plastic Technology
Poetics Today
Progress in Water Technology
Psychology of Women's Quarterly/Communication Research & Broadcasting

Quill and Scroll

Rainbow
Rassenra Haliana di Linguistica Applicata
Revue Belge de Phololgu et d'Historie
Romantismi
Rorshach Newsletter

Sangre
School Business Affairs
School Leader
Scientific Total Environment
Society ASME
South East Asian Journal of Tropical Medicine
Southern Living
Studia Mystica

Teaching of Psychology
Teen
Telephone Engineer & Management
Texas Studies in Literature and Language
This Week Magazine

University of Toronto Quarterly
Update on Law-Related Education

Water Waste Treatment
Women's Art Journal
Women's Sports & Fitness

Yachting

Zielsprache Deutsch

APPENDIX H

BIBLIOGRAPHY

Anderman, Ardis. "Searching for Online Information: A Primer." Link-Up (January 1985): 24-25.

Offers tips for the beginning searcher and stresses in-depth training to plan and execute successful search strategies.

Aversa, Elizabeth S., and Jacqueline C. Mancall. Management of Online Search Services in Schools. Santa Barbara, CA: ABC-CLIO, 1989.

A practical manual designed to facilitate the management of online services in schools. The early chapters offer suggestions for developing and maintaining online services including such aspects as planning the environment, policy preparation, professional development, service initiation and maintenance, and marketing. The second half of the manual consists of useful appendices with forms, worksheets, and checklists. Many of these are blank and can be copied and used directly for planning and data collection purposes.

Aversa, Elizabeth Smith, Jacqueline C. Mancall, and Diane Oesau. Online Information Services for Secondary School Students: A Current Assessment. Syracuse University, 1987. BRS, ERIC, ED 295682.

Using current literature and a 1986 survey of school-based online vendors, the role of online searching in school library media centers is examined. The findings indicate that although there is not yet widespread use of online training in the schools there does seem to be a growing interest in this technology. A 21-item bibliography and a list of vendor contacts are included.

Barlow, Diane, Brenda Karnes, and Gary Marchionini. "CD-ROM in a High School Library Media Center: A Research Project." School Library Journal 34:3 (November 1987): 66-72.

Describes the use of an electronic encyclopedia by high school students. The specifics of CD-ROM hardware and software, student search strategies, the use of Boolean logic, and an assessment of student satisfaction with the CD-ROM technology are discussed. The author encourages increased student use of electronic information retrieval systems for their data-gathering.

Borgman, Christine L., Dineh Moghdam, and Patti K. Corbett. Effective Online Searching: A Basic Text. New York: Marcel Dekker, 1984.

Intended for those who will act as search intermediaries, this book discusses the concepts and skills necessary to search online information systems. Included are chapters on the characteristics of a good searcher, search preparations, search strategy construction, techniques and procedures of searching, search evaluation, databases, equipment, and types of online training.

Brophy, Edward. "Awareness and Access to Knowledge: Providing Online Search Services in High Schools." Catholic Library World 58:1 (July/August 1986): 35-39.

Supplies basic information for library media specialists who are beginning to use an online searching service in the high school. Equipment selection, database vendors, and financing of the service are discussed as well as school administration involvement and the determination of users' information needs.

BRS/Search Service Video Training Course [Video Recording], Latham, NY: BRS Information Technologies, 1986 (3 video tapes).

A self-paced tutorial designed to help the student become a skilled user of the BRS/Search Service.

Craver, Kathleen W. Teaching Online Bibliographic Searching to High School Students. Paper presented at the YASD/ALSC Research Forum at the Annual Conference of the American Library Association, Dallas, TX, 25 June 1984. BRS, ERIC, ED 244633.

Reviews a course of study offered over a two year period which introduced college-bound high school seniors to online searching skills. The different methods to teach the course are examined and evaluated. The author concludes that high school students have benefitted from the online course because of the improvement of their research skills.

Craver, Kathleen W., and Lee Allison Ounianian. "An Introduction to Online Bibliographic Searching for High School Students: A Successful Approach." Educational Technology 24:6 (June 1984): 39-41.

Describes the introduction of online bibliographic searching to college-bound high school students. Taught to devise effective search strategies, the students were then able to observe those strategies executed by a skilled searcher. Also examined are the course objectives, teaching methods, and student observations.

Dowling, Karen. "Online Searching and the School Media Program." School Library Media Annual 1984, Vol. 2 (1984): 425-435.

Discusses the introduction of online databases in the school library media center and their integration with library skills. Means for implementing the system and examples of searches are provided.

Educational Resources Information Center (ERIC). Thesaurus of ERIC Descriptors, edited by James F. Houston, 11th edition. Phoenix, AZ: Oryx Press, 1987.

An alphabetized listing of terms used for indexing and searching in the ERIC system.

Epler, Doris. Online Searching Goes to School. Phoenix, AZ: Oryx Press, 1989.

Designed to help school librarians plan, integrate, and use online search services in their libraries. This text provides practical information on preparing the library facility for online services, the training of staff, management techniques, database selection, plus a chapter on online searching curriculum. Also discussed is the impact of online services in schools today and the prospects for those services in the future. The appendix contains a useful product and services directory.

Fenichel, Carol H., and Thomas H. Hogan. Online Searching: A Primer. 2nd ed. Marlton, NJ: Learned Information, 1984.

Basic text that gives an overview of online searching services. Discusses online vendors, database producers, mechanics of searching, online equipment and costs, and administrative aspects and training. Included in the appendices are a listing of vendors and databases, online journals, and extensive bibliographies. A glossary is also supplied.

Fiebert, Elyse Evans. "The Integration of Online Bibliographic Instruction into the High School Library Curriculum." Learning & Media 12:1 (Winter 1984): 4-5, 8.

Reviews the progress of a program initiated in 1982 to instruct all incoming 9th grade students in the use of online bibliographic searching. The impact this course of study has had on the students, teachers, library budget, and library staff is evaluated.

Glossbrenner, Alfred. How to Look It Up Online: Get the Information Edge with Your Personal Computer. New York: St. Martin's Press, 1987.

Detailed book on online searching intended for those already familiar with the basics of computer communications. Includes profiles on the leading database vendors, tools and techniques for searching any database, methods to solve research problems, and useful tips for saving time and money.

Going Online: An Introduction to the World of Online Information [Video Recording], Medford, NJ: Learned Information 1986.

Discusses how information is stored, transmitted, and accessed.

Gordon, Helen, ed. "Planting the Seed ... Online in Schools." Online 11:3 (May 1987): 15-36.

Contains eight articles which discuss online bibliographic services in schools. Some of the subjects included in the articles are: online training for library media specialists; results of a 1986 survey; descriptions of DIALOG, Dow Jones News/Retrieval Service, and BRS services for schools; and an overview of the Pennsylvania online library network.

Herring, James E., Lynda M. Bain, and Dorothy A. Williams. The Microcomputer in the School Library Project: Phase 1 September 1983 - August 1985. Robert Gordon's Institute of Technology, Aberdeen (Scotland). School of Librarianship and Information, 1986. BRS, ERIC, ED 278372.

Reports on a research project that links information technology with library information skills using a microcomputer as the information retrieval tool. The project focuses on the effective use of keywords and curriculum-linked bibliograhic databases. Findings indicated that the students' information retrieval skills were enhanced when fully integrated with their classroom assignments.

Hunter, Beverly, and Erica K. Lodish. Online Searching in the Curriculum: A Teaching Guide for Library/Media Specialists and Teachers. Santa Barbara, CA: ABC-CLIO, 1989.

Designed to help educators develop and apply online searching skills in the curricular areas of science and social studies. This text provides practical project ideas and flexible lesson plans that can easily be adapted to individual curriculum, interests, students, and resources. Each of the listed projects addresses problem solving, information handling, and critical thinking skills within the context of the particular discipline.

Jones, Pamela. "Online Research at the Secondary Level: Access to a World of Information." TechTrends 33:3 (April/May 1988): 22-23.

Indicates that research skills are developed when online searching is used by secondary school students. Also included is a comparison between online and optical data disk systems in the areas of cost, currency, subject areas, preparation needed, search time, search methods, and help needed.

Kachel, Debra E. "Online Bibliographic Searching: A Pilot Project." School Library Journal 32:9 (May 1986): 28-30.

Describes the introduction of online searching in a "Techniques of Research" class at Ephrata Senior High School (Lancaster, PA). Discusses teaching strategies, database usage, comparison of online versus manual searches, and student evaluation of course. Author concludes that although the instruction was time-consuming and costly, online searching does belong in the high school library curriculum.

Lee, Joann H., ed. Online Searching: The Basics, Settings & Management, 2nd ed. Englewood, CO: Libraries Unlimited, 1989.

The basics of managing an online searching service are discussed in this nontechnical overview of the search process. Both managerial and practical concerns are addressed and additional chapters focus on various settings for search services: school, academic, public, and corporate. Concluding this work is an extensive bibliography consisting of books, serial sources, journal columns, and annual publications relevant to online services.

Li, Tze-chung. An Introduction to Online Searching. Westport, CT: Greenwood Press, 1985.

Stresses the basics of online bibliographic searching. Divided into two parts, the first part of this book gives an overview of reference sources, thesauri, types of databases, and management techniques for an online service. Part II discusses searching techniques and procedures used with the BRS, DIALOG, and SDC systems. An additional chapter introduces several information utilities.

Mancall, Jacqueline C. "Teaching Online Searching: A Review of Recent Research and Some Recommendations for School Media Specialists." School Library Media Quarterly 13:3-4 (Summer 1985): 215-220.

Ideal for school media specialists designing curriculum for instruction in online searching. The guidelines and recommendations offered are based on past experiences on online instructors. The online training programs reviewed are: vendor, database producer, course-based, self-instruction, and locally designed programs.

Mancall, Jacqueline C. "Training Students to Search Online: Rationale, Process, and Implications." Drexel Library Quarterly 20:1 (Winter 1984): 64-84.

Describes the instruction of online searching to students in school library media centers. Various aspects of the online program such as the teaching methods, search steps, and its pros and cons are discussed. The implications on online searching for library media programs in the areas of student instruction, collection development, and service goals are analyzed.

Naisbitt, John. Megatrends: Ten New Directions Transforming Our Lives. New York: Warner Books, 1982.

An insightful analysis of the political, societal, and economic currents that will shape the future. The predictions for tomorrow are based on a dynamic analysis of what America is today.

Palmer, Roger C. Online Reference and Information Retrieval. Littleton, CO: Libraries Unlimited, 1983.

Introduces the fundamental aspects of online information retrieval systems. An overview of the role of database producers, vendor systems, and the searcher is presented as well as a practical orientation to searching on the BRS, DIALOG, and ORBIT vendor systems. The final section of this book contains an analysis of the interview process and a discussion of trends and issues with regard to online searching.

Parisi, Lynn S., and Virginia L. Jones. Directory of Online Databases and CD-ROM Resources for High Schools. Santa Barbara, CA: ABC-CLIO, 1988.

Offers information to school librarians and other educators who wish to use online databases for teaching research skills to high school students. The book is divided into the specific curriculum areas of social studies, science, English, and general subjects. Each curriculum area includes a listing of relevant databases and supplies database specifics such as

scope of materials covered, intended users, practical applications as a high school research tool, updatings, and vendor availability.

Pennsylvania Department of Education. Problem Definition Process: A Guide to Research Strategies. Harrisburg, PA: Pennsylvania Department of Education, State Library of Pennsylvania, 1989.

Designed to support PENNSYLVANIA ONLINE: A Curriculum Guide for School Library Media Centers, this manual is also relevant for school librarians teaching the research elements involved in manual searches. The problem definition process is divided into several steps including such aspects as developing the research question, identifying and expanding key words, differentiating between general and specific topics, and developing an effective search strategy. Included with each step are easy-to-use lesson plans and worksheets.

Pruitt, Ellen, and Karen Dowling. "Searching for Current Information Online ... How High School Library Media Centers in Montgomery County, Maryland, Are Solving an Information Problem by Using DIALOG." Online 9:2 (March 1985): 47-60.

Describes a public school system's introduction of online searching to high school seniors. The program's hardware and software selection, database usage, curriculum objectives, sample searches, and implications for the future are discussed in detail.

Reed, Mary Hutchings. The Copyright Primer for Librarians and Educators. Chicago, IL: American Library Association, 1987.

Supplies basic copyright information for the library media specialist on the reproduction of library materials, photocopying and fair use.

Riedl, Richard. "Computer Communications Potentials for Library Media Centers: An Introduction." School Library Media Activities Monthly 3:3 (November 1986): 28-31.

Explores the three basic methods of computer communication used in schools: bulletin board systems, information utilities, and bibliographic database systems. Each communication system is briefly described and practical applications for their use in the school library media center are suggested.

Riedl, Richard. "Computer Communications Problems: How to Teach Your Students to Overcome Them." School Library Media Activities Monthly 3:4 (December 1986): 29-32, 50.

Discusses the essential skills needed by students to understand and use computer communications. The author stresses the importance of effective keyword searching, Boolean logic, computer commands, and the ability to retrieve information from electronic bulletin boards and information utilities.

Roose, Tina. "Online Searches for Kids." Library Journal 109:16 (November 1, 1984): 2010-2011.

Discusses the debate on whether librarians should provide information for students or instruct them in the methods and sources through which they can find it for themselves. This debate extends to information available online which the author stresses is an invaluable to young people as it is to adults.

Schrader, Susan. A Curriculum Guide for Online Database Searching with High School Students. Ankery, OH: Heartland Education Association, 1985. BRS, ERIC, ED 256373.

Designed to assist educators in teaching online bibliographic searching to high school students. This guide presents the goals of online instruction (which are integrated with the existing curriculum), teacher objectives, search strategies, class activities, student worksheets, sample searches, and general information on database vendors.

Schmude, Margaret J. "Online Serendipity." The Book Report (September/October 1989): 23-25.

Describes how a high school in Illinois integrated online searching into classrooms. This article also provides a list of do's and dont's for librarians to consider when integrating online searching services.

Shaw, Debora. "Nine Sources of Problems for Novice Online Searchers." Online Review 10:5 (1986): 205-303.

Reports on some common problems that library science students encountered while being trained in online searching. Some of the problems described in detail are database selection, search tactics, and interaction with the online system.

Smith, Bev. "Student Searchers: Are They Out There?" Information Today (March 1984): 1-2, 32-33.

Reports on online searching programs in school systems throughout the country. Also discussed is the Pennsylvania Department of Education's efforts to promote and integrate online programs into curricular instruction.

Tenopir, Carol. "Online Searching in Schools." Library Journal 111:2 (February 1, 1986): 60-61.

Reports on several school library programs that have introduced online searching to their elementary and secondary school students. The focus is on actual searches performed by librarians and students, search strategies, database selection and usage, and low cost options offered by vendors.

Tenopir, Carol. "To Err is Human: Seven Common Searching Mistakes." Library Journal 109:6 (April 1, 1984): 635-636.

Describes some of the more common searching mistakes made by beginning searchers. Included are the difficulties with Boolean logic, nesting, spacing, basic typing skills, and the use of synonyms, plurals, and variant spellings. Also addressed is the searcher's failure to formulate different strategies for different databases and an unwillingness to refine and evaluate an executed search.

Thinkabout [Video Recording]. Thinkabout Series. Bloomington, IN: Agency for Instructional Television, n.d. 69 video cassettes, col.

A series of sixty 15-minute video cassettes to help fifth and sixth graders acquire and use the skills needed to become independent learners and problem solvers in areas such as language arts, mathematics, and study skills. Special emphasis is placed on their common denominator, thinking.